

FINAL

**REMEDIAL INVESTIGATION REPORT
FOR
TULSA FUEL AND MANUFACTURING
COLLINSVILLE, OKLAHOMA**

**VOLUME I
Text, Tables, and Figures**

August 2007

Prepared for



**Oklahoma
Department of Environmental Quality**



**Burns & McDonnell Project No. 36478
Burns & McDonnell Engineering Company
Engineers-Architects-Consultants
Kansas City, Missouri**

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EXECUTIVE SUMMARY

This report was prepared as part of the Remedial Investigation/Feasibility Study (RI/FS) conducted at the Tulsa Fuel and Manufacturing (TFM) Superfund Site (Site) in Collinsville, Oklahoma. The purpose of this *Remedial Investigation (RI) Report* [RI Report] is to document the evaluation of current conditions as they pertain to potential threats to human health and the environment associated with past activities at the Site. This RI Report was prepared by Burns & McDonnell Engineering Company, Inc. (BMCD) under contract with the Oklahoma Department of Central Services Construction and Properties Division on behalf of the Oklahoma Department of Environmental Quality (DEQ). The RI field and reporting activities is 100 percent federally funded through a Cooperative Agreement between the DEQ and the United States Environmental Protection Agency (USEPA).

Site Background

During World War I zinc was in great demand. It was used to galvanize armaments to prevent rust. A zinc smelter and lead roaster were at the TFM location from 1914 through 1925. Historically, the smelter was known as the Prime Western Smelter. The TFM was also misnamed as the Acme Brick Strip Mines site, since it was immediately adjacent to a strip mine on its southern boundary (DEQ, 2005b). Use of the land prior to the smelting operation is unknown (Oklahoma State Department of Health [OSDH], 1992b).

The smelting operation utilized nine furnaces, approximately 150 feet (ft) in length by 60 ft wide, which were believed to be fueled by nearby natural gas wells. Other main structures of the smelter included a mechanical kiln building approximately 240 ft by 80 ft in size, a condenser room approximately 75 ft by 50 ft in size, and a laboratory. A 2-million gallon capacity reservoir was used in conjunction with the condenser room during smelting operations. In addition, large amounts of ore were stored on the site in the area northeast of the operations area (Figure 1-2). Little is known about waste management at the smelter during its operation. Due to the time period in which the smelter operated, it is unlikely that air emission control devices were used (DEQ, 1994 and OSDH, 1992b).

The majority of the structures have been demolished, but several foundations and building footings remain on the TFM. A residence, which was occupied from 1935 through February 2002, was located on the TFM near the former office building (paymaster hut). The on-site residence was destroyed by a fire and is currently unoccupied. The residence has a water well that was used in the past for drinking water but is no longer in use. No other residential structures are located on the site; however, a garage and a few storage sheds remain in place adjacent to the former residence.

Although the TFM is partially fenced, there is evidence of trespassing. There is evidence of fishing and hunting activity around the ponds on the TFM. In addition, individuals have been observed picking blackberries along the eastern fenced boundary and evidence of off-road vehicle traffic is present. The area in the vicinity of the on-site residence, including the garage and storage sheds and along the access road/driveway, has become a trash dump. Broken appliances, used exercise equipment, junked cars, and assorted trash/debris were observed.

Strip mining occurred in the surrounding area. Immediately south of the site was a strip mining operation approximately 40 acres in size, which was known as the Acme Brick Strip Mine (OSDH, 1992b). A water-filled surface impoundment (i.e., Strip Mine Pit), which acts as a southern boundary to the TFM, is currently associated with the former strip mine.

The Collinsville Smelter is located approximately ¼ mile to the east-northeast of the TFM (Figure 1-1). The Bartelsville Zinc Company owned and operated this zinc smelter between 1911 and 1918. The Bartelsville Zinc Company owned 220 acres of land surrounding the Collinsville Smelter, and an area of approximately 40 acres has been designated as the location where the primary smelter activities occurred.

Previous investigations of the site have included: the OSDH Preliminary Assessment in 1992, a DEQ Site Inspection in 1994, a USEPA Removal Assessment in 1999, and an Agency for Toxic Substances and Disease Registry (ATSDR) Public Health Assessment in 2000. These investigations indicated the presence of waste materials and elevated metals concentrations at the site.

Physical Characteristics

The TFM Site is approximately 1-1/3 miles south of downtown Collinsville in Tulsa County, Oklahoma. The TFM is located in the NE1/4 SE1/4 NE1/4 Section 31 and SW1/4 NW1/4 Section 32 Township 22 North Range 14 East in Tulsa County, Oklahoma, and has the coordinates of 36° 20' 45.59" north latitude and 95° 50' 51.28" west longitude. Previous reports indicated that the TFM consists of approximately 50 acres (OSDH, 1992); however, measurement of the area inside the TFM boundary indicated on Figure 3-1 is approximately 60.7 acres. Previous studies have indicated that approximately seven (7) acres of the site are covered with approximately 30,000 cubic yards of waste consisting of broken retorts and condensers, slag, building debris, ash, bricks, and other materials from the former smelting operations (DEQ, 2005b). During the RI, waste materials were visually observed at the surface or within borings or trenches across approximately 25 acres. This waste area is located to the south of the access road/driveway and included Ponds 1, 2 and 3. In addition, the access road/driveway was observed to contain waste materials. The waste piles are not covered, and run-off is uncontrolled. The waste borders the southern strip mine

impoundment, and portions of the waste have collapsed into the impoundment. Ponds 1, 2, and 3, which are assumed to be remnants of the 2-million gallon reservoir, are located north of the former smelter operation area (DEQ, 2005b). A retort embankment was observed lining Pond 3 during RI activities. In addition, two smaller ephemeral ponds are located on the TFM. The area north of the access road/driveway is vegetated with grasses.

The TFM vicinity is underlain by unconsolidated overburden that primarily consists of silt, clay, silty loam, and shale sediments and residuum. The unconsolidated overburden at the TFM is relatively thin and consist primarily of the Kanima Series and the Okemah-Parson-Carytown complex and Dennis-Radley complex (United States Department of Agriculture [USDA], 1977). In addition, a small area of the Kanima series was also identified at the south of the property, closest to the Strip Mine Pit. Based on information obtained during the Phase I and Phase II investigations, bedrock was encountered beneath the TFM at depths ranging from 7.2 to 12.5 ft below ground surface (bgs). Initial bedrock encountered at TFM consisted primarily of shale, with a few instances of sandstone and limestone.

Smelter operation waste material, consisting of broken retorts and condensers, slag, building debris, ash, and bricks was identified within the southeast area of the TFM property. The occurrence of the waste material increased toward the southeast of the TFM property, where discrete zones of slag material were encountered. Where encountered, the discrete zones of slag material were primarily found at or near the ground surface with thicknesses ranging from approximately 0.5 ft to 7.0 ft bgs. Smelter operation waste material was also identified along the access road/driveway located within the TFM boundaries.

No major bedrock or alluvial aquifers lie beneath the site. The Seminole Formation, the upper bedrock aquifer beneath the TFM, consists of shale, sandstone, and thin coal beds and has a thickness of approximately 200 ft. The Seminole Formation reportedly yields small amounts of fair to poor quality water and has been designated Class IIB as a minor use general basin (Oklahoma Administrative Code [OAC], 2004). Based on RI Phase I and Phase II activities, the occurrence of groundwater beneath the site is very limited, however, it does appear to be continuous across the TFM. Seven new monitoring wells were installed during RI activities. Water levels obtained from the monitoring wells indicated that groundwater flow is generally toward the south/southeasterly direction.

The TFM is vegetated by various grass species, trees, and shrubs creating diverse habitat types. There are areas of dense vegetation interspersed with sparsely vegetated areas and patches of bare or rocky ground. According to the U.S. Fish and Wildlife Service and Oklahoma Biological Survey records, four state and federally protected wildlife species are known or are likely to occur in Tulsa County.

RI Field Investigation

The RI field investigation activities were conducted in two phases between July 11, 2005 and September 21, 2006. These field activities were conducted to characterize potential source areas and to evaluate the nature and extent of contamination to provide a basis for a risk assessment of the Site. Sampling activities were conducted for on-site surface and subsurface soils and waste, off-site surface soils, surface water, sediment, groundwater, vegetation, and air to evaluate current conditions for the Site.

The contaminants of potential concern (COPCs) that were analyzed included arsenic, cadmium, lead, and zinc. While historical investigation such as DEQ's 1994 Site Inspection and USEPA's 1999 Removal Assessment indicate other metals such as copper and manganese are present on-site, review of the data indicated that elevated results for arsenic, cadmium, lead, and zinc were noted with elevated concentrations of other metals. Therefore, it was determined that the metals were co-located and analysis for arsenic, cadmium, lead, and zinc would adequately characterize contaminated areas.

To provide for a comparison of Site conditions to background levels, samples for each of the matrices were collected from off-Site and/or upgradient locations. On-site surface soil, subsurface soil, and waste sampling resulted in the collection of 221 soil/waste samples from 63 boring and 21 trench locations. Off-site surface soil sampling resulted in the collection of 184 surface soil samples from 50 distinct properties. Surface water and sediment samples were collected from six on-site features and five off-site features. Groundwater samples were collected from nine temporary piezometers, seven newly installed monitoring wells, and one existing residential well over three sampling events. Berry, leaf, and/or root samples were collected from blackberry bushes on-site and on the adjacent property in the 2004, 2005, and 2006 growing seasons. Two air samples were collected to evaluate air quality conditions at the Site.

Nature and Extent of Contamination

Results from this investigation have indicated that on-site surface and subsurface soils, off-site surface soils, surface water, sediment, groundwater, and vegetation have been impacted at the Site. Laboratory analytical results were compared against applicable screening levels and to background values for each media sampled. For surface soil and subsurface soil the 95 percent upper confidence limit (UCL) of the arithmetic mean of the soil concentration was used as the background value. Since only two surface water and sediment samples were collected, the ranges of metals results for these two samples were used for data comparison. Since only one background groundwater, ecological/vegetation and air sample was collected, the background values utilized were the actual analyte detections, where applicable.

A comparison of analytical data to background values indicates that one or more metals were detected above background levels in all of the on-site surface soil and the majority of the on-site subsurface soil samples. In addition, one or more metals exceeded background levels in the majority of the off-site surface soil, surface water, sediment samples, and vegetation samples. Zinc results for groundwater samples from three on-site monitoring wells exceeded background. Lastly, the background and investigative air quality results were similar in concentration.

Laboratory analytical results from sampling completed during the RI field activities indicate that on-site surface and subsurface soils, surface water, sediment, groundwater, and vegetation have been impacted with metals. Additionally, surface soil, surface water, and sediment have been impacted with metals at certain off-site properties. Review of the Site indicated a clear division into two areas: 1) areas of the TFM site where waste materials were not visually observed during sampling (i.e., on-site non-waste areas); and, 2) areas of the TFM site where waste materials were visually observed during sampling (i.e., on-site waste areas).

The on-site non-waste area was approximately 36 acres, and approximately 25 acres of this area exhibited soil concentrations that exceeded residential screening levels in the 0 to 0.5 ft bgs interval. The on-site contamination in the non-waste area is primarily located in the top 0 to 0.5 ft of soil, with small areas nearest the waste area and slag-waste driveway exhibiting lead results in excess of residential screening levels up to 2 ft bgs. Maximum concentrations in this area were 416 mg/kg of arsenic, 799 mg/kg of cadmium, 5,170 mg/kg of lead, and 41,400 mg/kg of zinc. Concentrations of metals in samples collected nearest the northern and eastern TFM boundaries in the non-waste area exhibited the lowest on-site metal concentrations, and the horizontal extent of metals was established in this area. The horizontal extent of metals in the non-waste area was less clearly defined along the western TFM boundary, and samples collected from the properties directly west of the TFM exhibited concentrations of lead that exceeded the residential soil screening value. Sampling conducted on these properties defined the western extent of contamination relative to the TFM site

The on-site waste area was approximately 25 acres and is shown with a tan background on Figure 4-2. Smelter waste materials (slag, broken retorts, etc.) were visually observed at the ground surface or within trenches or soil borings placed in this area. The waste area also includes the access road/driveway, which was constructed of smelter waste materials. The entire waste area contained soil with lead results in excess of residential screening levels in the 0 to 0.5 ft bgs interval. Additionally, exceedences of industrial screening levels were also noted. Maximum concentrations in the waste area were 1,170 mg/kg of arsenic, 1,620 mg/kg of cadmium, 71,700 mg/kg of lead, and 165,000 mg/kg of zinc. Horizontally, the

highest concentrations of metals were observed in the south portion of the site and were associated with the former smelter operations area. The southern extent of the waste area was defined at the Strip Mine Pit, and waste slag piles were observed to have collapsed into the Strip Mine Pit. Soil samples collected off-site south of the Strip Mine Pit did not exhibit elevated metals results. The eastern edge of the waste area was noted at the property boundary; however, waste materials were noted outside of the fenceline in a low area between the TFM boundary and the Atchinson Topeka Santa Fe Railroad right-of-way. The railroad, which was constructed in 1899 prior to operation of the smelter, acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks.

On-site, metal concentrations decrease as sample depth increases. The vertical extent of metals contamination varied across the waste area. On the west side of Pond 3 near the on-site residence, waste was generally encountered to approximately 1 ft bgs. Across much of the waste area, waste materials varied in thickness between 2 to 3 ft bgs. Waste materials were observed up to 5 ft deep in the area between Ponds 1 and 2 and the area between Ponds 2 and 3. In addition, waste materials were observed up to 7 ft bgs across the length of the former smelter operations area. Samples collected from areas and depth intervals where waste material was observed exhibited results for toxicity characteristic leaching procedure (TCLP) cadmium or TCLP lead that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure soil and waste materials at these locations would be classified as hazardous. Very few exceedences of screening levels were noted in samples collected below the waste materials from native clay material. In many cases these results were similar to background concentrations. Neither of the samples collected from native materials beneath the waste exhibited soil results that failed the TCLP screening criteria.

Surface soil samples were collected from off-site locations to determine the presence and extent of contamination due to potential aerial distribution of metals from the TFM smokestack and historical placement. Samples were also collected from targeted sampling areas such as parks, schools, and playgrounds; tribal member properties near the TFM; and areas where waste materials were either visually observed or historically reported. Samples were collected from properties in the area immediately surrounding the TFM and from properties up to 1 ½ miles from the site. The data do not suggest an aerial dispersion plume from the TFM that resulted in widespread contamination. However, it was noted that properties greater than 1 mile from the TFM site exhibited the lowest concentrations of metals in surface soil. Several properties immediately adjacent to the TFM exhibited metals results in excess of screening values, and the presence of smelter waste materials was typically visually observed at these locations.

Eleven (11) off-site properties with surface soil samples that exhibited lead concentrations in excess of the 400 mg/kg residential soil screening level were additionally characterized. At least one sample collected from these properties exhibited a lead result in excess of the residential screening level. In addition, materials with the appearance of smelter waste were observed at the following properties: right-of-way/ditches adjacent to TFM and associated with Old US Hwy 169 and the railroad, (b) (6)

(b) (6)

(b) (6)

(b) (6)

(b) (6)

With the exception of areas where access agreements could not be obtained for additional delineation, the extent of elevated metals was typically defined for these properties.

Surface water and sediment were characterized for five on-site ponds, one on-site drainage, and the Strip Mine Pit immediately adjacent to the waste area. Surface water and sediment results were compared to applicable USEPA Region VI human health or ecological screening levels and/or Oklahoma Water Quality Criteria. The highest concentration of metals was noted in surface water and sediment associated with TFM Ponds 1 through 3 and the Mid-Site Ravine. Waste materials were observed in and around these surface water bodies, and a retort embankment was observed at Pond 3. In addition, smelter waste materials were observed to have collapsed into the Strip Mine Pit.

Surface water and sediment were also characterized for off-site areas where surficial transport from the TFM could have occurred. These areas included the drainage ditches associated with the railroad and Old US Hwy 169, a drainage on the northern portion of (b) (6), and a drainage on the southern portion of (b) (6). The ditches adjacent to the railroad and Old US Hwy 169 and the northern drainage on (b) (6) in (b) (6) exhibited elevated metals concentrations in surface water and sediment. A large culvert passes from the TFM property under the railroad and to these drainages. Concentrations of metals decreased with increasing distance from the culvert.

Limited impacts were noted to groundwater beneath the TFM. Low-flow groundwater sampling conducted during RI Phase II indicated that elevated metals concentrations (i.e., cadmium) were only noted at Monitoring Well MW-04. The vertical extent of cadmium was defined by a groundwater sample from MW-04D, which was screened in a deeper interval than MW-04 and was non-detect for cadmium. The downgradient horizontal extent of cadmium was defined at off-site Well MW-06, which was non-detect for metals.

Samples were collected from off-site and on-site blackberry bushes during the 2004, 2005, and 2006 growing seasons. Elevated concentrations of metals were noted in blackberry samples collected from on-site bushes relative to the off-site bushes. Since washing of the berries reduced metals concentrations, the berry contamination appeared to be a result of aerial deposition of dust onto the berries rather than plant uptake.

Air monitoring samples were collected during RI Phase I. The results of the of the samples collected upwind versus downwind samples were similar, suggesting that the TFM is not currently a source of airborne contamination to off-site locations.

Contaminant Fate and Transport

Contaminant behavior in the environment is an important determinant of exposure pathways and concentrations. Contaminant behavior is a function of physical and chemical properties specific to the contaminant and characteristics of the matrix in which it exists. Important physical and chemical properties include vapor pressure (volatility), sorption, solubility in water, and biodegradation. In general, highly water-soluble chemicals are less strongly adsorbed to soil and can be readily leached to groundwater. Chemicals with low vapor pressures are more likely to remain in soils and water and less likely to vaporize. Additionally, compounds that are highly water soluble and have a greater tendency to volatilize will be more likely to be broken down to other products by biological processes (biodegrade).

Metals are the contaminants of concern at the Site. Although overland flow to surface water and sediment is likely at the Site, slag/waste piles have also been observed to have collapsed into the Strip Mine Pit, and a culvert to the Collinsville Smelter site was noted, it does not appear that any of these pathways are major contaminant transport routes. Most of the contaminants were detected in surface and subsurface soils, indicating that leaching from surface soils is a possible contaminant transport mechanism at the Site. Although metals were detected in the soils, little migration of these contaminants to groundwater appears to be occurring. The constituents appear to be remaining in the soil.

Baseline Risk Assessment

The potential for human health risk from exposure to chemicals at the Site was considered for soil, air, groundwater, surface water, sediment, fish tissue, and plant tissue. COPCs were identified for each medium in the waste and non-waste areas on-Site and for the different properties that were sampled in the off-Site investigation. The COPC selection process was based on a toxicity screening using published screening levels from USEPA Region VI.

Information regarding current and potential future land and water use was used to develop the exposure scenarios evaluated; many of the same exposure scenarios were evaluated for both the waste and non-waste areas. The Site is currently vacant, and the future land use has not been decided; therefore, the risk assessment evaluated resident, trespasser, and outdoor commercial/industrial scenarios. Since future occupation of the Site would necessitate development, a construction/utility scenario was also evaluated. As there are currently no restrictions or ordinances prohibiting the installation of drinking water on the Site, groundwater was evaluated as a potential potable water source. Based on these land and water use assumptions, potentially exposed populations and potentially completed pathways were identified.

Future on-Site adult and child residents were assumed to be potentially exposed to constituents in shallow (0-2 ft bgs) soil through incidental ingestion, dermal contact, and ingestion of washed produce; constituents in outdoor air through inhalation; constituents in groundwater through ingestion and dermal contact; and constituents in surface water and sediment through incidental ingestion and dermal contact.

On-Site youth trespassers were assumed to be potentially exposed to constituents in shallow (0-2 ft bgs) soil through incidental ingestion, dermal contact, and ingestion of unwashed produce; constituents in outdoor air through inhalation; and constituents in surface water and sediment through incidental ingestion and dermal contact.

Future on-Site Outdoor commercial/industrial workers were assumed to engage in seasonal groundskeeping/landscaping activities that could lead to exposure to constituents in shallow (0-2 ft bgs) soil through incidental ingestion and dermal contact, constituents in outdoor air, and constituents in surface water and sediment through dermal contact. Future on-Site construction/utility workers were assumed to be potentially exposed to constituents in soil through ingestion, dermal contact, and inhalation of dust; constituents in shallow groundwater through dermal contact from pooled water in an excavation trench; and constituents in surface water from the on-site cistern.

Chemical intake was calculated for each chemical in each medium using the maximum detected concentration or 95 percent UCL as the exposure concentration, whichever was applicable.

Hazard indices for the following populations exceeded the USEPA level of concern for noncancer risk, which is a hazard index greater than one:

- Future waste area adult and child residents;
- Future non-waste area adult and child residents;
- Future waste area outdoor commercial/industrial workers;

- Future waste area construction/utility workers;
- Future waste area trespassers;
- Current/Future off-site trespassers;
- Current child resident at (b) (6)
- Current adult and child residents at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6)
- Current child resident at Tulsa County Plat (b) (6)

Excess lifetime cancer risk estimates for the following scenarios exceeded the USEPA target risk range of one in 10,000 to one in a million:

- Future waste area residents;
- Future non-waste area residents;
- Future waste area outdoor commercial/industrial workers;
- Current resident at (b) (6)
- Current resident at (b) (6);
- Current resident at (b) (6)
- Current resident at (b) (6)
- Current resident at (b) (6);
- Current resident at (b) (6)

The following populations had excess lifetime cancer risk estimates within the USEPA target range of one in 10,000 to one in a million:

- Future non-waste area outdoor commercial/industrial workers;
- Future waste area construction/utility workers;
- Future non-waste area construction/utility workers;
- Future waste area trespassers;
- Current/Future off-site trespassers;
- Current resident at (b) (6)
- Future resident at City Park;

- Current resident at [REDACTED] (b) (6)
- Current resident at (b) (6)
- Current resident at [REDACTED] (b) (6)
- Current resident at [REDACTED] (b) (6)
- Future resident at High School property;
- Current resident at [REDACTED] (b) (6)
- Current resident at Tulsa Co. Plat (b) (6)
- Current resident at [REDACTED] (b) (6)
- Future resident at Pioneer Park;
- Current resident at (b) (6)
- Current resident at (b) (6)
- Current resident at [REDACTED] (b) (6)
- Current resident at [REDACTED] (b) (6)
- Current resident at [REDACTED] (b) (6)
- Current resident at [REDACTED] (b) (6)
- Current resident at [REDACTED] (b) (6)

To evaluate potential health risks associated with exposure to lead, detected concentrations of lead in on-Site soil were used in the USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) model for residents, and the adult lead model for outdoor commercial/industrial and construction/utility workers. Detected concentrations of lead in off-site soil were compared to the USEPA recommended screening level of 400 mg/kg for residential scenarios. The results of this comparison indicate that concentrations of lead in on-site and selected off-site soil samples are likely to pose health risks to residential or commercial/industrial receptors.

Ecological Risk Assessment

Both the on-site waste area and on-site non-waste area of the TFM Site were evaluated both qualitatively and quantitatively to assess risk to ecological receptors and the presence of completed ecological exposure pathways. Based upon observed Site conditions, it was concluded that flora and fauna could be exposed to Site-related constituents through direct contact and/or ingestion of soil, pond sediments, surface water, and fish. Similarly, it was concluded that area fauna could be exposed to Site-related constituents through the bioaccumulation of Site related constituents in benthic invertebrates, aquatic and terrestrial invertebrates, aquatic and terrestrial plants, small mammal prey, and fish. However, it was

assumed that groundwater was not part of a completed pathway and animals that inhabit the Site would not be exposed to site-related constituents through direct contact and/or ingestion of groundwater.

In general, the greatest risk from exposure to COPECs was from on-site waste area soils and sediments. Surface water, regardless of source, typically resulted in the least amount of risk from exposure to COPECs. Among the four areas (i.e., on-site waste, on-site non-waste, off-site, and background) the soils, sediments, and surface water in the background area resulted in the least amount of risk from exposure to COPECs.

A comparison of the soils from the on-site waste, on-site non-waste, off-site, and background areas indicates that the detected concentrations of chemicals are greatest in the on-site waste area, relatively similar in the on-site non-waste and off-site areas (off site properties adjacent to the TFM Site), and least in the background area. Based on the results of the soil invertebrates evaluation, the risk of exposure to COPECs is greatest for soil invertebrates within the on-site waste area and least for soil invertebrates within the background area. The risk of exposure to COPECs is relatively similar for soil invertebrates within the on-site non-waste and off-site areas; however, soil invertebrates from the off-site area experience slightly more risk.

Based on the result from the evaluation of terrestrial plants, blackberry shrubs in the on-site waste area experienced a greater risk from exposure to COPECs than blackberry shrubs from the off-site and background areas. The risk from exposure to COPECs experienced by terrestrial plants from the on-site non-waste area was greater than what was experienced by blackberry shrubs from the on-site waste area; however, the risk experienced by terrestrial plants from the on-site non-waste area, which is based on maximum concentrations detected in soils from the on-site non-waste area and not sampled vegetation, may overestimate the actual risk experienced by terrestrial plants from the on-site non-waste area.

The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin (species with relatively small home ranges that likely spend all of their lives within one area), indicate that living within the on-site waste area will result in the greatest amount of risk from exposure to COPECs and living within the background area results in the least amount of risk from exposure to COPECs. The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin also indicate that the on-site non-waste area and off-site area result in less risk from exposure to COPECs than the on-site waste area. Additionally, the on-site non-waste area, in general, will result in a greater amount of risk from exposure to COPECs than the off-site area.

With the exception of the red-tailed hawk, the results of the evaluations for the red fox, raccoon, and white-tailed deer (species with relatively large home ranges that likely only spend a fraction of their time within a given area) indicate that the relatively small amount of time that is spent in either the on-site waste area or the on-site non-waste area results in a relatively smaller amount of risk from exposure to COPECs than what is experienced during time spent within the off-site area. The red-tailed hawk experiences risk from exposure to COPECs through the consumption of surface water and small mammal prey (cottontail rabbit) and by inadvertently consuming soils. The results of the evaluation for the red-tailed hawk mirror the result of the evaluation for the cottontail rabbit and indicate that the greatest amount of risk from exposure to COPECs was experienced in the on-site waste area, the next greatest amount of risk was experienced in the on-site non-waste area, the third greatest amount of risk was experienced in the off-site area, and the least amount of risk from exposure to COPECs was experienced in the background area.

In general, exposure to sediments resulted in a greater amount of risk from exposure to COPECs than exposure to surface waters. Populations of benthic invertebrates from the on-site waste area experienced a greater amount of risk from exposure to COPECs than populations of benthic invertebrates from the on-site non-waste area, off-site area, and background area. Populations of benthic invertebrates from Pond 1 of the on-site waste area experienced the greatest amount of risk from exposure to COPECs. Populations of benthic invertebrates from the drainage ditches east and west of the railroad tracks in the off-site area, which are located east and down stream from Pond 1 in on-site waste area, experienced a greater amount of risk from exposure to COPECs than benthic invertebrate populations within the Farm Pond (northwest and up stream from the TFM Site) and the intermittent drainage east of the Strip Mine Pit (located downstream of the Strip Mine Pit).

The benthic invertebrates that inhabit Strip Mine Pit experienced the least amount of risk from exposure to COPECs than all ponds and surface waters in the on-site waste area. Populations of benthic invertebrates from Pond 4 in the on-site non-waste area experienced less risk from exposure to COPECs than benthic invertebrate populations inhabiting Ponds 1 through 3 and the Mid-Site Ravine in the on-site waste area. The benthic invertebrates that inhabit Pond 5 experienced the least amount of risk from exposure to COPECs than all other ponds and surface waters of the TFM Site. Benthic invertebrate populations that inhabit the City Lake and the pond at (b) (6) from the background area experienced the least amount of risk from exposure to COPECs.

Great blue herons from the on-site waste area experienced the most risk from exposure to COPECs from consuming sediments from the Strip Mine Pit and the least amount of risk from exposure to COPECs

from consuming surface water. Similarly, Mallard ducks from the on-site waste area experienced the most risk from exposure to COPECs from consuming benthic and aquatic invertebrates and sediments and the least amount of risk from consuming aquatic plants and surface water. The belted kingfisher, which only consumed fish and surface water, experienced the least amount of risk from exposure to COPECs in the on-site waste area.

Aquatic invertebrates and aquatic plants that occur in the Mid-Site Ravine and Pond 1 of the on-site waste area and in the drainage ditches along Old U.S. Hwy 169 experienced the most risk from exposure to COPECs. Populations of aquatic invertebrates and aquatic plants that occurred in the Strip Mine Pit, Farm Pond, and City Lake, experienced the least amount of risk from exposure to COPECs because surface water samples taken from those ponds yielded no detections for arsenic, cadmium, lead, and zinc.

Fish populations within the Strip Mine Pit experienced a greater amount of risk from exposure to COPECs than fish populations within the drainage ditches along Old U.S. Hwy 169 and east of the on-site waste area. Fish populations within the intermittent drainage east of the Strip Mine Pit, Farm Pond, and City Lake experienced the least amount of risk from exposure to COPECs. This result is because the maximum concentration of arsenic, cadmium, lead, and zinc detected in tissues taken from fish within the Strip Mine Pit is greater than the maximum concentrations detected in the surface water of the Strip Mine Pit or other surface waters from the off-site and background areas.

The raccoon is an omnivore that forages and hunts for food within terrestrial and aquatic environments. For the purposes of this evaluation, raccoon were evaluated separately because they occupy both the terrestrial and aquatic habitats. The amount of risk from exposure to COPECs that a raccoon is exposed to is based on maximum concentrations detected in surface water, sediments, soils, and vegetation sampled and the modeled uptake concentration calculated for benthic invertebrates, soil invertebrates, fish, and small mammals from each area and terrestrial plants from the on-site non-waste area where no vegetation was sampled. As indicated previously, raccoon from the off-site area experienced more risk from exposure to COPECs than raccoon from the on-site non-waste and on-site waste areas because of the relative amount of time that a raccoon spends within each area (on-site waste, on-site non-waste, and off-site) within its assumed home range. In general, raccoons experienced the most risk from exposure to COPECs from consuming benthic invertebrates, soil invertebrates, soils, and sediments and the least amount of risk from consuming fish, small mammals, terrestrial plants, and surface water.

Snakes, lizards, box turtles, and painted turtles that occupy the TFM Site are likely experiencing some site-related risk. These species potentially consume and come in contact with soils, terrestrial plants,

surface water, aquatic plants, or pond sediments at the TFM Site. The surrogate for insectivorous lizards and toads, the insectivorous short-tailed shrew, had higher rates of soil ingestion and experienced greater risk than did other representative species. The surrogate for the box turtle, the omnivorous meadow vole, also experienced significant risk due to consuming soils and soil invertebrates within the TFM Site. These reptile species and their surrogates burrow in the ground and consume prey that lives in soils. Among the surrogates for the painted turtle (the omnivorous mallard duck and piscivorous belted kingfisher) the mallard duck experienced greater risk from exposure to COPECs than did the belted kingfisher. The majority of the risk experienced by the mallard duck resulted from exposure to pond sediments. However, this evaluation may over-predict the risk because it was assumed that the diets and rates of consumption of reptiles, terrestrial mammals, and aquatic birds were similar or comparable even though avian and mammalian receptors have different metabolisms than reptiles.

Secondary exposures to potential receptors may result from the bioaccumulation and bioconcentration of chemicals through the food chain. The mallard duck, great blue heron, belted kingfisher, red fox, red-tailed hawk and other species near the top of the food chain are potentially the most vulnerable to effects of bioaccumulation.

In general, inorganic arsenic compounds are more toxic than organic arsenic compounds whereas organic lead compounds were more toxic than inorganic lead compounds. Arsenic poisoning in wildlife is rare and there is no evidence of magnification along the aquatic food chain because most of the ingested arsenic is rapidly excreted in the urine within the first few days of exposure (Eisler, 1988a). Cadmium, which is also excreted primarily in urine and feces, tends to increase in concentration with age of the organism and may eventually act as a cumulative poison (Eisler, 1985). Lead is also bioconcentrated by organisms with concentrations increasing as the organism ages, localizing in hard tissues such as bone and teeth (Eisler, 1988b). Biomagnification of Arsenic, cadmium, and lead through the food chain is negligible (Eisler, 1985, 1988a, and 1988b). Zinc is a nutritionally important essential trace element but may biomagnify up the food chain and may cause problems in aquatic systems (Eisler, 1993). Ingestion of zinc at recommended levels is beneficial to the health of an animal. Ingestion of zinc at high levels may lead to systemic toxicity; however, the levels required to induce toxic effects are unlikely to be obtained through exposure to environmental media.

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LIST OF ACRONYMS AND ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BMcD	Burns & McDonnell Engineering Company, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
cm ²	square centimeter
COD	chemical oxygen demand
COPC	Chemical of Potential Concern
DEQ	Oklahoma Department of Environmental Quality
DMP	Data Management Plan
°F	Fahrenheit
FDI	Fluor Daniel, Inc.
FS	Feasibility Study
FSP	Field Sampling Plan
ft	feet
g/day	grams per day
gpm	gallons per minute
HEAST	Health Effects Assessment Summary Table
HHBRA	Human Health Baseline Risk Assessment
HI	Hazard Indices
HRS	Hazard Ranking System
HSP	Health and Safety Plan
ICP	Inductively Coupled Plasma
IDW	Investigation Derived Waste
IEUBK	Integrated Exposure Uptake Biokinetic Model
IQ	Intelligence Quotient
IRIS	Integrated Risk Information System
ITEC	Inter-Tribal Environmental Council
kg	kilogram
kg/kg-day	kilograms produce per kilogram body weight per day
kg/meal	kilograms per meal
L/day	liter per day
L/hr	liter per hour
LOAEL	lowest observed adverse effect level
µg/kg	microgram per kilogram
µg/m ³	microgram per cubic meter
µg/dL	microgram per deciliter

LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	microgram per liter
mg/cm ²	milligram per centimeter squared
mg/m ³	milligram per cubic meter
mg/day	milligram per day
mg/L	milligram per liter
mg/kg	milligram per kilogram
mg/kg/day	milligrams of chemical per kilogram of bodyweight per day
mg/cm ²	milligram per square centimeter
mph	miles per hour
msl	mean sea level
m ³ /hr	cubic meter per hour
m ³ /kg	cubic meter per kilogram
MF	modifying factors
NCI	National Cancer Institute
NESHAP	National Emission Standard for Hazardous Air Pollutants
NPL	National Priorities List
NWCC	National Water and Climate Center
NWS	National Weather Service
NOAEL	no observed adverse effect level
OAC	Oklahoma Administrative Code
OCC	Oklahoma Conservation Commission
OCS	Oklahoma Climatological Society
ONHI	Oklahoma Natural Heritage Inventory
OSDH	Oklahoma State Department of Health
OWRB	Oklahoma Water Resources Board
PA	Preliminary Assessment
PA Report	<i>Preliminary Assessment Report for Acme Brick Strip Mines – Collinsville, Oklahoma</i>
PEF	Particle Emission Factor
PM ₁₀	small particulate matter < 10 microns
ppm	parts per million
PPRTV	Provisional Peer-Reviewed Toxicity Value
PRP	Potentially Responsible Party
QAPP	Quality Assurance Project Plan
R	rejected
RAGS	Risk Assessment Guidance for Superfund
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RI/FS DMP	<i>Remedial Investigation/Feasibility Study Data Management Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma</i>
RI/FS FSP	<i>Remedial Investigation/Feasibility Study Sampling and Analysis Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma. Volume I, Field Sampling Plan.</i>

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

RI/FS HSP	<i>Remedial Investigation/Feasibility Study Health and Safety Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma</i>
RI/FS PI	<i>Remedial Investigation/Feasibility Study Phase I Preliminary Data Report Tulsa Fuel</i>
Data Report	<i>and Manufacturing, Collinsville, Oklahoma</i>
RI/FS QAPP	<i>Remedial Investigation/Feasibility Study Sampling and Analysis Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma. Volume I, Quality Assurance Project Plan</i>
RI/FS Work Plan	<i>Remedial Investigation/Feasibility Study Work Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma</i>
RME	Reasonable Maximum Exposure
SARA	Superfund Amendments and Reauthorization Act
SEL	Oklahoma State Environmental Lab
SI	Site Inspection
SI Report	<i>Site Inspection Report for Tulsa Fuel and Manufacturing</i>
SOP	Standard Operating Procedure
START	Superfund Technical Assistance Response Team
STL Burlington	Severn Trent Laboratories of Colchester, Vermont
STSC	Superfund Technical Support Center
TAL	Target Analyte List
TBC	to-be-considered
TGS	Tulsa Geological Survey
TCLP	Toxicity Characteristic Leaching Procedure
TFM	Tulsa Fuel and Manufacturing site in Collinsville, Oklahoma
TOC	total organic carbon
TRW	technical review workgroup
TSP	total suspended particulate
UCL	upper confidence limit
UF	uncertainty factor
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
XRF	X-Ray Fluorescence Spectroscopy

* * * * *

1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of this Remedial Investigation (RI) Report [RI Report] is to document the evaluation of current site conditions as they pertain to potential threats to human health and the environment associated with the Tulsa Fuel and Manufacturing site in Collinsville, Oklahoma (TFM, See Figure 1-1). This RI Report was prepared by Burns & McDonnell Engineering Company, Inc. (BMCD) under contract with the Oklahoma Department of Central Services Construction and Properties Division on behalf of the Oklahoma Department of Environmental Quality (DEQ). The RI/Feasibility Study (FS) is 100% federally funded through a Cooperative Agreement between DEQ and the United States Environmental Protection Agency (USEPA).

The RI/FS was performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP), and followed the *USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988), the *Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual (Parts A and D)* (USEPA, 1989), as well as all other applicable regulations and requirements. This RI Report was also written to satisfy the requirements of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. Included within this RI Report are characterizations of the nature and extent of contamination, an evaluation of the fate and transport of contaminants, and human health and ecological risk assessments. Objectives of the RI were as follows:

- Quantify the nature and extent of on-site contamination;
- Quantify the volume of waste material present on-site;
- Determine the nature and extent of any off-site contamination;
- Characterize the physical and chemical nature of the site, including fate and transport mechanisms;
- Determine potential ecological and human health risk; and
- Obtain information necessary to evaluate remedial alternatives in the FS.

1.2 SITE BACKGROUND

1.2.1 Site Description

As indicated in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database, the location for the TFM is approximately 1-1/3 miles south of downtown Collinsville in Tulsa County, Oklahoma. The TFM is located in the NE1/4 SE1/4 NE1/4 Section 31 and SW1/4 NW1/4 Section 32 Township 22 North Range 14 East in Tulsa County, Oklahoma, and has the coordinates of 36° 20' 45.59" north latitude and 95° 50' 51.28" west longitude. As shown on Figure 1-1, the area within the TFM site boundary consists of approximately 60.7 acres and is bounded by "Old" U.S. Highway 169 and the Atchinson Topeka Santa Fe railroad tracks to the east, an impoundment (i.e., strip mine pit) that comprises the boundary of a former strip mining operation to the south, and agricultural lots to the north and west (Oklahoma State Department of Health [OSDH], 1992b). Additionally, the Faith Assembly Church property bounds the TFM to the north. The Collinsville Smelter, which is a former zinc smelter, is located approximately ¼ mile to the east-northeast of the TFM (Figure 1-1) on 220 acres of property formerly owned by the Bartelsville Zinc Company (Exponent, 2001).

In 2004, a 6-foot chain link fence was installed across the access road/driveway entrance into the TFM (DEQ, 2005a). The location of the fence is shown on Figure 1-2. Barbed-wire fencing is also located along the western boundary (Figure 1-2). The southern boundary is comprised of the strip mine pit, which is the only unfenced boundary (Figure 1-2).

The TFM consists of approximately 50 acres (OSDH, 1992b). The majority of the facility structures have been demolished. Previous studies have indicated that portions of the site are covered with waste consisting of broken retorts and condensers, slag, building debris, ash, bricks, and other materials from the former smelting operations (DEQ, 2005b). This waste area is located to the south of the access road/driveway (Figure 1-2). The waste varies in thickness from 2-feet (ft) to greater than 6-ft. The waste piles are not covered, and run-off is uncontrolled. The waste borders the southern strip mine impoundment, and portions of the waste have collapsed into the impoundment. This impoundment, which receives surface water runoff from the TFM, is reportedly a local fishery and flows into an intermittent drainage ditch (eastern wetlands, Figure 1-2) that borders on the eastern edge of the waste (DEQ, 2005b). An intermittent stream originates in this area and flows approximately ¾ mile before draining into Blackjack Creek, which is located east of the TFM (Figures 1-1 and 1-2). It has been reported that the southern impoundment is connected hydraulically with the intermittent stream and that the stream receives surface water runoff from the site (OSDH, 1992b); however, this connection was not observed during RI activities. Three intermittent ponds, which are assumed to be remnants of the 2-

million gallon reservoir, are located north of the former smelter operations area (DEQ, 2005b). In addition, two smaller ephemeral ponds are located on the TFM (Figure 1-2). The area north of the access road/driveway is vegetated with grasses (Figure 1-2).

A residence (Figure 1-2), which was occupied from 1935 through February 2002, was located on the site near the former office building (paymaster hut). The on-site residence was destroyed by a fire and is currently unoccupied. The residence has a water well, which was used in the past for drinking water (DEQ, 2005b). A cistern is located just north of the mid-site ravine intermittent drainage that travels west to east across the southern portion of the TFM (Figure 1-2).

1.2.2 Site History

1.2.2.1 Past and Current Site Activities

During World War I zinc was in great demand. It was used to galvanize armaments to prevent rust. A zinc smelter and lead roaster were at the TFM location from 1914 through 1925. Historically, the smelter was known as the Prime Western Smelter. The TFM was also misnamed as the Acme Brick Strip Mines site, since it was immediately adjacent to a strip mine on its southern boundary (DEQ, 2005b). Use of the land prior to the smelting operation is unknown (OSDH, 1992b).

The smelting operation utilized nine furnaces, approximately 150 ft in length by 60 ft wide, which were believed to be fueled by nearby natural gas wells. Other main structures of the smelter included a mechanical kiln building approximately 240 ft by 80 ft in size, a condenser room approximately 75 ft by 50 ft in size, and a laboratory (See Figure 1-2). A 2-million gallon capacity reservoir was used in conjunction with the condenser room during smelting operations. In addition, large amounts of ore were stored on the site in the area northeast of the waste piles (Figure 1-2). Little is known about waste management at the smelter during its operation. Due to the time period in which the smelter operated, it is unlikely that air emission control devices were used (DEQ, 1994 and OSDH, 1992b). A copy of the Sanborn Fire Insurance Map is provided in Appendix A-1.

Strip mining occurred in the surrounding area. Immediately south of the site was a strip mining operation approximately 40 acres in size, which was known as the Acme Brick Strip Mine (OSDH, 1992b). A water-filled surface impoundment (i.e., strip mine pit), which acts as a southern boundary to the TFM, is currently associated with the former strip mine. It has been reported that this impoundment serves as a local fishery (DEQ, 2005b). Another strip mine area operated just east of the TFM, and one was located in northeast Collinsville (Figure 1-1).

The Collinsville Smelter, which is being evaluated through DEQ's Voluntary Cleanup Program, is located approximately ¼ mile to the east-northeast of the TFM (Figure 1-1). The Bartelsville Zinc Company owned and operated this zinc smelter between 1911 and 1918. The Bartelsville Zinc Company owned 220 acres of land surrounding the Collinsville Smelter, and an area of approximately 40 acres has been designated as the location where the primary smelter activities occurred. In 1987, the Collinsville Smelter was reclaimed and regraded by the Oklahoma Conservation Commission (OCC) in conjunction with reclamation of the adjacent coal strip mine (Exponent, 2001).

The majority of the structures have been demolished, but several foundations and building footings remain on the TFM. On September 28, 1928, the 120-foot tall and 11-foot diameter smokestack was imploded. A residence (Figure 1-2), which was occupied from 1935 through February 2002, was located on the TFM near the former office building (paymaster hut). The on-site residence was destroyed by a fire and is currently unoccupied. The residence has a water well that was used in the past for drinking water but is no longer in use. No other residential structures are located on the site; however, a garage and a few storage sheds remain in place adjacent to the former residence.

Although the TFM is partially fenced, there is evidence of trespassing. There is abundant evidence of fishing and hunting activity around the ponds on the TFM, and fishing in the ponds has been reported on several occasions. In addition, individuals have been observed picking blackberries along the eastern fenced boundary and evidence of off-road vehicle traffic is present. The area in the vicinity of the on-site residence, including the garage and storage sheds and along the access road/driveway, has become a trash dump. Broken appliances, used exercise equipment, junked cars, and assorted trash/debris were observed during the March 29, 2005 site tour.

At other smelter sites in Oklahoma, slag or waste material was transported off the site and used as fill in driveways, gardens, and school running tracks. Since the TFM was abandoned in the 1920s and large amounts of slag material were left behind, this could have occurred in the past. Other than an investigation of the former Collinsville Strip Mine (Fluor Daniel, Inc. [FDI], 1997), no sampling data prior to Phase I of the RI was performed to evaluate that possibility. During a February 14, 2001 DEQ site visit, DEQ located what appeared to be a slag-based parking lot at 123 W. 5th Street in Collinsville, Oklahoma. Additionally, a local newspaper article from 1936 stated that a rock crusher was placed at the TFM for the manufacturing of road base for area roads (DEQ, 2005b).

1.2.2.2 Regulatory History

The TFM was identified during a formal study of zinc smelters in the state of Oklahoma. As indicated in the CERCLIS database, discovery related to the site occurred in July 1992. In November 1992 under the direction of USEPA as part of a Multi-Site Cooperative Agreement (CA# V-00645-01), the OSDH conducted a Preliminary Assessment (PA) of the TFM (then referred to as the Acme Brick Strip Mines). The purpose of the PA was two-fold: 1) to assess the immediate or potential threat of wastes at the TFM that may impact public health or the environment; and 2) to collect sufficient information to support a decision regarding the need for further action under CERCLA/SARA (OSDH, 1992b).

In September 1994, the DEQ conducted a focused Site Inspection (SI) under the direction of USEPA. The objectives of the SI were to characterize and evaluate the potential risks associated with possible hazardous substances. Information was collected such that one of the following decisions could be made regarding the TFM: 1) conduct an expanded SI; 2) propose the site for the National Priority List (NPL); 3) propose “No further remedial action planned” status; or 4) refer the site to the USEPA emergency response branch for immediate action (DEQ, 1994).

As indicated in the CERCLIS database, a search for potentially responsible parties (PRPs) was undertaken from August through September 1998. The *Hazard Ranking System (HRS) Documentation Record* was completed by USEPA in September 1998, and the TFM was proposed to the Superfund NPL on September 29, 1998. Final listing of the TFM to the NPL occurred on January 19, 1999.

In May of 1999, the USEPA Superfund Technical Assistance and Response Team (START) completed a *Removal Assessment Report* for the TFM. The objectives of the Removal Assessment were to: 1) conduct an on-site reconnaissance; 2) conduct a site records review at the Tulsa County courthouse; 3) prepare a site location map; 4) collect and analyze soil, sediment water, air, and fish tissue samples; 5) perform an aerial survey of the site; and 6) determine the extent of contamination and estimate waste volumes (USEPA, 1999). On July 27, 1999 USEPA in conjunction with DEQ and the Agency for Toxic Substances and Disease Registry (ATSDR) held a public meeting to inform concerned citizens about the site. A Fact Sheet describing the history, health issues, and planned action at the TFM was available at the public meeting (DEQ, 2001). ATSDR finalized the *Public Health Assessment for Tulsa Fuel and Manufacturing* in July 2000 (ATSDR, 2000).

The Special Notice Letter was issued by USEPA on July 21, 2000, with a follow-up meeting conducted August 29, 2000. A letter dated September 5, 2000 addressed the PRP request for copies of the *Removal*

Assessment Report and clarifications regarding USEPA's Enforcement Position. Clarification was provided to the PRP by USEPA's letter dated October 24, 2000 along with the two requested copies of the *Removal Assessment Report* (USEPA, 2004).

A DEQ press release was published in the January 24, 2001 issue of the Collinsville News. The news article outlined a brief history of the site, requested information from concerned citizens, and gave contact information for the DEQ project manager. Voluntary blood lead testing was conducted on children from 6 months to 6 years of age on May 21 and 22, 2001 (DEQ, 2001).

The PRP declined to conduct the RI/FS. In September 2001, the DEQ assumed the role of conducting the RI/FS, and the USEPA assumed the role of support agency when the cooperative agreement was funded (USEPA, 2004). A Unilateral Administrative Order for Access and Noninterference was signed on May 1, 2003, and issued to two property owners of the site. A second Unilateral Administrative Order for Access and Noninterference was signed on July 3, 2003, and issued to the same two property owners to allow for the required compliance deadline. Access to the property was granted by the two property owners in August 2003 (USEPA, 2004). In order to restrict public access to the site, USEPA partially fenced the area in March 2004.

In November 2003, DEQ provided a Statement of Work and Request for Qualifications to firms interested in performing the RI/FS for the TFM under contract to the DEQ. This work was contracted to BMcD in March 2005.

1.2.3 Previous Investigations

1.2.3.1 OSDH 1992 Preliminary Assessment

In November 1992 under the direction of USEPA, the OSDH conducted a PA of the TFM (then referred to as the Acme Brick Strip Mines). The purpose of the PA was two-fold: 1) to assess the immediate or potential threat of wastes at the TFM that may impact public health or the environment; and 2) to collect sufficient information to support a decision regarding the need for further action under CERCLA/SARA. The scope of the PA included review of available information from an interview with the property owner and a site reconnaissance. Results of the PA were presented in the *Preliminary Assessment for Acme Brick Strip Mines – Collinsville, Oklahoma* ([PA Report], OSDH, 1992b).

Based on observations made during the site reconnaissance, assessments were made of groundwater, surface water, soil, and air. No samples were collected or submitted for analysis. The following conclusions were made regarding these media (OSDH, 1992b):

- Due to the unknown depth of waste on the site, particularly a large amount of smelter residue waste, groundwater in the vicinity may have been impacted.
- Surface water has the potential for contamination due to the high potential for runoff to be discharged into on-site and off-site streams.
- On-site soil contamination appears widespread, and human exposure to contaminated soil exists.
- Since the site operations involved smelting at a time when there were no emission standards, suspended particulates may have caused “fallout” that may occur in an extended area from the TFM. Additionally, waste is evident at the ground surface (i.e., lack of vegetation or other cover), and particulates associated with this waste may constitute a continued air release from the site.

1.2.3.2 DEQ 1994 Site Inspection

In September 1994, the DEQ conducted a focused SI under the direction of USEPA. The objectives of the SI were to characterize and evaluate the potential risks associated with possible hazardous substances. Information was collected such that one of the following decisions could be made regarding the site: 1) conduct an expanded SI; 2) propose the site for the NPL; 3) propose “No further remedial action planned” status; or 4) refer the site to the USEPA emergency response branch for immediate action. Results of the SI were presented in the *Site Inspection Report for Tulsa Fuel and Manufacturing* ([SI Report], DEQ, 1994).

As part of the SI, an interview was conducted with the on-site residents. At the time of the interview, both residents had lived on-site for over 50 years and did not appear to have any health problems related to the wastes. One resident informed DEQ that he had placed ducks on a pond to the east of their home, and the ducks died within a few days. He also stated that horses, especially colts, would not live on the site (DEQ, 1994).

According to recommendations in USEPA SI guidance, air sampling was not conducted as part of the focused SI. However, DEQ noted that smelter residue was present at the ground surface and constituted a

potential source for release of particulates to the atmosphere. During its years of operation, the smelter likely constituted a source of gas and particulate emissions to the surrounding area from its smokestack (DEQ, 1994).

The following samples were collected and analyzed for metals as part of the SI:

- Ten (10) surface water samples and one duplicate sample were collected. One surface water sample served as a background sample for the investigation.
- Ten (10) sediment samples and one duplicate sample were collected. One sediment sample served as a background sample for the investigation.
- Five (5) surface soil samples and one duplicate sample were collected. One surface soil sample served as a background sample for the investigation.
- Four (4) waste pile samples and one duplicate sample were collected.

DEQ sampled the on-site well, which was the only well identified within one mile of the TFM, following the PA. The results indicated that total metals were within drinking water standards. Since no contamination was found in the on-site well and groundwater was not widely used in the area, the groundwater migration pathway was not evaluated during the SI (DEQ, 1994).

The following conclusions were made regarding the samples and results:

Surface Water

Surface water samples were collected and analyzed for the 23 Target Analyte List (TAL) metals. The metals detected above the background values (in micrograms per liter [$\mu\text{g/L}$]) included:

Metals Detected Above Background Sample Concentrations in Surface Water Source: DEQ 1994 SI Report		
Metal	Range of Detections ($\mu\text{g/L}$)	Background Value ($\mu\text{g/L}$)
Aluminum	82.9 – 2,050	503
Barium	19 – 101	63.2
Calcium	28,000 – 114,000	23,800
Lead	23.9 – 31.8	Not Detected (Reporting Limit = 5.8)
Magnesium	8,340 – 49,800	6,510
Manganese	20.7 – 300	69.5
Potassium	2,370 – 4,630	1,950

Metals Detected Above Background Sample Concentrations in Surface Water Source: DEQ 1994 SI Report		
Metal	Range of Detections (µg/L)	Background Value (µg/L)
Sodium	19,800 – 45,600	20,000
Zinc	21.3 – 2,460	34.5

None of the surface water results exceeded the raw water values for public and private water supplies listed in the Oklahoma Water Quality Standards. Barium and cadmium exceeded the primary drinking water standards for Oklahoma. Additionally, aluminum, iron, and manganese exceeded the recommended secondary standards for Oklahoma (DEQ, 1994).

Sediment

Sediment samples were collected at the same locations as the surface water samples and analyzed for the same constituents. The metals detected above background concentrations (in milligrams per kilogram [mg/kg]) included:

Metals Detected Above Background Sample Concentrations in Sediment Source: DEQ 1994 SI Report		
Metal	Range of Detections (mg/kg)	Background Value (mg/kg)
Aluminum	3,870 – 19,700	9,720
Antimony	50.9 (only one value exceeded)	Not Detected (Reporting Limit = 11.2)
Arsenic	3.3 – 514	23.1
Beryllium	0.33 – 2.6	2.4
Cadmium	Not Detected – 183	Not Detected (Reporting Limit = 1)
Calcium	1,120 – 6,120	2,590
Copper	5.9 – 1,190	28.7
Iron	8,530 – 93,500	92,400
Lead	6 – 25,400	94
Magnesium	682 – 2,860	1,960
Manganese	260 – 4,550	2,760
Mercury	Not Detected – 1.4	Not Detected (Reporting Limit = 0.13)
Nickel	8.4 – 48.8	40
Potassium	2,370 – 4,630	1,010
Silver	Not Detected – 70.5	7.7
Sodium	19,800 – 45,600	197
Zinc	40 – 22,900	4,110

With the exception of two locations, the samples with elevated metals were located on the TFM. Metals with detections in excess of three times the SI background sample included: antimony, arsenic, cadmium, copper, lead, mercury, silver, and zinc (DEQ, 1994).

Surface Soil

One surface soil sample was collected from the on-site residence, three from residences to the north of the site, and one from a background location. Samples were analyzed for TAL metals. The metals detected above the SI background sample concentration included:

Metals Detected Above Background Sample Concentrations in Surface Soil		
Source: DEQ 1994 SI Report		
Metal	Range of Detections (mg/kg)	Background Value (mg/kg)
Aluminum	5,770 – 10,500	8,170
Arsenic	10.4 – 26.7	8.1
Barium	68.5 – 173	63.3
Beryllium	0.4 – 0.79	0.44
Cadmium	4.2 – 70.1	4.2
Calcium	2,460 – 20,800	1,310
Copper	36.7 – 130	17.2
Iron	14,900 – 22,300	13,900
Lead	226 – 1,700	191
Manganese	521 – 1,060	384
Mercury	Not Detected – 0.28	Not Detected (Reporting Limit = 0.12)
Nickel	13 – 16.1	11.3
Potassium	809 – 1,680	624
Silver	3.3 – 6.3	2.6
Sodium	151 – 351	147
Vanadium	15.1 – 24.8	18.4
Zinc	525 – 10,700	53,400

Metals with detections in excess of three times the SI background level included: arsenic, cadmium, copper, lead, and zinc. These exceedences were located in the yard of the on-site residence. Copper and calcium each showed an elevated concentration greater than three times the background level in one off-site sample each (DEQ, 1994). No other metals exhibited elevated concentrations in the off-site samples.

Waste Samples

Waste samples were collected at 4 locations on the site and analyzed for TAL metals. Metals with detections in excess of three times the background level for soil included: arsenic, cadmium, cobalt, copper, iron, lead, manganese, nickel, silver, and sodium. Additionally, concentrations of arsenic,

cadmium, and lead were elevated enough to indicate potential to fail the toxicity characteristic leaching procedure (TCLP) test for determination of hazardous waste due to concentrations in excess of 20 times the TCLP limit. At the time, DEQ estimated that an area of approximately 10 acres was covered with waste, with an estimated volume of 32,300 cubic yards.

Selected tables and figures from this report are presented in Appendix A-2.

1.2.3.3 USEPA 1999 Removal Assessment

From October 1998 through February 1999, USEPA START contractor conducted a Removal Assessment of the TFM. The objectives of the Removal Assessment were to: 1) conduct an on-site reconnaissance; 2) conduct a site records review at the Tulsa County courthouse; 3) prepare a site location map; 4) collect and analyze soil, sediment, water, air, and fish tissue samples; 5) perform an aerial survey of the site; and 6) determine the extent of contamination and estimate waste volumes. Results of the Removal Assessment were presented in the *Removal Assessment Report for Tulsa Fuel and Manufacturing* (USEPA, 1999).

The following samples were collected and analyzed for metals as part of the Removal Assessment (UESPA, 1999):

- Soil samples were collected and analyzed on-site for metals using X-ray fluorescence (XRF) spectroscopy, as follows:
 - Surface and subsurface soil were collected from seven (7) background sample locations.
 - Surface and subsurface soil were collected from six (6) locations along the access road/driveway.
 - Surface soil was collected from two (2) locations at the on-site residential property.
 - Sixty-six (66) discrete surface soil samples were collected along a grid that was placed at 200-foot spacing across the site.
 - Thirty three (33) composite surface soil samples were collected along transects that were placed in the presumed most contaminated areas of the site.
 - Subsurface soil samples were collected at 40 biased locations throughout the site among identified waste piles. Each location was divided into three separate sample depths depending on soil content identified as slag, clay mixed with slag, or natural clay.

- Several surface water, sediment, soil confirmation, fish tissue, and air samples were collected and submitted to an off-site laboratory for analysis of metals using USEPA methodology, as follows:
 - Surface water samples were collected at two (2) depths (surface and mid-depth) in each of the three on-site ponds and the southern impoundment.
 - Sediment samples were collected at five (5) locations in each of the three on-site ponds and at 10 locations in the southern impoundment.
 - Nine (9) of the samples analyzed on-site using the XRF were submitted for confirmation analysis. This included samples from the following locations: one (1) background, one (1) road, one (1) residential property, one (1) discrete surface soil grid, and five (5) waste pile locations.
 - Seven (7) fish tissue samples were collected from fish caught in the southern impoundment. No fish were observed in the three on-site ponds during the sampling event.
 - Twenty-seven (27) air samples were collected using high-volume air samplers placed at five locations about the site.

The following observations were made regarding the samples and results:

On-Site Soil Analysis using XRF Spectroscopy

XRF analysis focused on the analysis of copper, zinc, and lead as markers for on-site contamination. The concentrations in parts per million (ppm) were noted as part of the XRF investigation (USEPA, 1999):

Metal Results for Surface Soil Analyzed On-Site Source: USEPA 1999 Removal Assessment Report			
Sample Location	Copper (ppm)	Zinc (ppm)	Lead (ppm)
Background	Not Detected – 60	44 – 3,800	Not Detected – 700
Road	Not Detected – 1,900	140 – 50,000	3 – 8,000
Residential Property	100 – 162	9,000 – 11,000	1,400 – 1,600
Grid (Discrete Surface Soil)	Not Detected – 4,000	1,000 – 88,000	200 – 36,500
Transect (Composite Surface Soil)	Not Detected – 3,500	700 – 104,000	140 – 22,000
Waste Piles	Not Detected – 2,700	32 – 79,500	Not Detected – 40,000

Of these samples, nine were submitted to an off-site laboratory for analysis of metals using USEPA methodology as a means to confirm the XRF data. Comparison of lead results for these samples was as follows:

Comparison of Lead Results from On-Site XRF Analysis versus Laboratory Analysis Source: USEPA 1999 Removal Assessment Report			
Sample Location	Sample Name	XRF Data Lead (ppm)	Lab Data Lead (ppm)
Background	B03S	Not Detected	14
Road	RD03SS	394	476
Residential Property	RPF	1602	1560
Grid (Discrete Surface Soil)	T016	504	566
Waste Piles	WPAC	24	14.4
Waste Piles	WPDS	39,964	91,800
Waste Piles	WPECS	590	922
Waste Piles	WP1CS	351	629
Waste Piles	WP14S	475	492

Surface Water

Surface and subsurface water samples were collected from the three on-site ponds and the southern impoundment. The following observations were made regarding the on-site ponds (USEPA, 1999):

- Arsenic ranged from not detected to 0.051 milligrams per liter (mg/L).
- Cadmium ranged from 0.006 to 0.029 mg/L.
- Copper was not detected.
- Lead ranged from 0.005 to 0.108 mg/L.
- Zinc ranged from 1.16 to 1.89 mg/L.

With the exception of one lead detection at the reporting limit (0.003 mg/L), arsenic, cadmium, copper, lead, and zinc were not detected in surface water samples collected from the southern impoundment.

Sediment

Sediment samples were collected from the three on-site ponds and the southern impoundment. The following metal concentrations were noted in the sediment samples (USEPA, 1999):

Select Metal Results for Sediment Source: USEPA 1999 Removal Assessment Report					
Sample Location	Arsenic (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
On-Site Ponds	Not Detected – 16.6	5.84 – 189	2.77 J – 57.2 J	12.4 J – 395 J	428 J – 4,800 J
Southern Impoundment	4.39 – 7.75	2.43 – 10.2	8.04 – 18.7 J	35.7 – 249 J	168 – 584 J

Fish Tissue

No fish were encountered in the three on-site ponds during the sampling event. Seven catfish were caught from the southern impoundment, and submitted to the off-site laboratory for analysis of metals.

The following observations were made regarding the fish tissue samples (USEPA, 1999):

- Arsenic, cadmium, and lead were not detected.
- Copper ranged from not detected to 2.36 mg/kg.
- Zinc ranged from 8.03 to 18.1 mg/kg.

Air

Air samples were collected from five locations throughout the site and analyzed for metals. Very few detections were noted. The highest concentration of lead detected was 0.013412 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This sample was collected from Waste Pile C at the southern end of the site (USEPA, 1999).

Waste Volume Estimation

Based upon the depth of materials, the *Removal Assessment Report* concluded that an estimated volume of 29,588 cubic yards of waste were present at the TFM. Additionally, the report estimated that the total surface area of lead concentrations in excess of 500 ppm was 41.3 acres (USEPA, 1999).

Selected figures from the ATSDR Public Health Assessment that incorporated this data are provided in Appendix A-3.

1.2.3.4 ATSDR 2000 Public Health Assessment

The ATSDR provided an evaluation of the public health significance of the TFM by reviewing historical sample data and community health concerns to determine whether adverse health effects were possible due to the site. This public health assessment was presented in the *Public Health Assessment for Tulsa Fuel and Manufacturing, Collinsville, Tulsa County, Oklahoma* (ATSDR, 2000).

Based on data collected by DEQ during the 1994 SI and USEPA during the 1999 Removal Assessment, ATSDR noted that on-site soil, sediment, and surface water showed elevated levels of metal constituents, including arsenic, cadmium, copper, lead, manganese, and zinc. Additionally, the assessment stated that limited data existed for on-site groundwater and off-site soil, sediment, and surface water (ATSDR, 2000). Furthermore, the assessment noted that exposure to site constituents was limited by the isolated,

rural location of the site. However, it was also noted that recreational activities such as fishing have occurred on the TFM, but ATSDR assumed these exposures to be somewhat limited (ATSDR, 2000).

The *Public Health Assessment* concluded that the TFM currently does not pose an apparent health hazard due to the limited exposure to on-site soils, sediment, and surface water. However, the assessment also concluded that frequent, long-term exposure to on-site soil would be a health concern. An evaluation of the health implications of any off-site contamination was not performed due to the limited data (ATSDR, 2000).

The *Public Health Assessment* recommended access restrictions for the site. Additionally, the assessment recommended that future residential exposures be considered in soil removal or remediation efforts. Due to the limited off-site data, the assessment recommended that the extent of any off-site contamination due to the TFM be determined. Furthermore, it was recommended that young children in the area should have their blood tested for lead as a precautionary measure (ATSDR, 2000).

Selected tables and figures from this report are presented in Appendix A-3.

1.2.3.5 Conclusions from Pre-RI Investigations

In September 1994, the DEQ conducted a focused SI at the TFM. In May of 1999, the USEPA completed a *Removal Assessment Report*. Samples collected from the waste pile revealed elevated concentrations of arsenic, cadmium, cobalt, copper, lead, manganese, nickel, silver, and zinc. Sediment and surface water samples collected from the southern pond and eastern wetlands document releases of arsenic, cadmium, copper, lead, silver, and zinc from the waste pile to the surface water. The results presented in the *SI Report* and *Removal Assessment Report* combined with the nature of smelter sites across Oklahoma allowed DEQ to identify the following preliminary chemicals of potential concern (COPC) at this site (DEQ, 2005b):

- arsenic, cadmium, lead, and zinc

These contaminants were found on site in concentrations more than three times background concentrations. Only eight surface soil samples were collected off-site, mostly to the north, and may not be representative of other areas around the TFM. Although some of the off-site metal concentrations were above background values, they were much lower than site concentrations. In the eight samples collected, maximum concentrations of arsenic, cadmium, lead, and zinc were slightly above background values. No residential properties were sampled during USEPA's Removal Assessment (DEQ, 2005b).

1.2.3.6 Sampling Activities and Results for Sites in the Vicinity of TFM

1.2.3.6.1 Collinsville Strip Mine Site

FDI was tasked by USEPA Region 6 to conduct a Brownfields Initiative Investigation at the Collinsville Strip Mine Site (USEPA ID No. BOK000000001) in Collinsville, Oklahoma. The Collinsville Strip Mine Site is a former strip mine located at 724 N. 5th Street in Collinsville, Oklahoma. The investigation focused on the south property, which is approximately 20 acres and located immediately adjacent to a residential area (FDI, 1997). The location of the Collinsville Strip Mine is shown on Figure 1-1.

Historically, the site contained a pit that was used by local children for swimming and fishing. The pit had dangerously high walls, and was considered a public safety hazard. As such, the OCC proposed in 1995 to correct the safety hazard by removing the pit. The pit was filled to grade, the disturbed area was graded and shaped to conform with adjacent topography, and grass was planted at the site (FDI, 1997).

Two zinc smelters, the TFM smelter and the Collinsville Smelter, operated within one mile of the site in the early 1900s. Waste from these former smelters has reportedly been used as fill material in the area. Due to the possible use of these wastes in the fill and possible deposition of airborne metals, an investigation was conducted. Ten on-site surface soil and one background sample were collected and analyzed for TAL metals. The concentrations of selected metals were noted in the surface soil samples, as follows (FDI, 1997):

Select Metal Results for Surface Soil					
Source: FDI 1997 Collinsville Strip Mine Site					
Sample Location	Arsenic (ppm)	Cadmium (ppm)	Copper (ppm)	Lead (ppm)	Zinc (ppm)
On-Site Surface Soil	8.9 – 35	Not Detected - 6	18 - 43	20 – 60	117 – 287
Background	17	Not Detected	33	53	187

Selected tables and figures from this report are presented in Appendix A-4.

1.2.3.6.2 Collinsville Smelter Site

The Collinsville Smelter is located approximately ¼ mile to the east-northeast of the TFM and operated as a zinc smelter between 1911 and 1918 by the Bartelsville Zinc Company. RI field activities were conducted at the Collinsville Smelter Site in 1995, 1996, and 1998. The objectives of the RI were as follows: 1) evaluate the distribution of site-related COPCs, 2) evaluate the potential migration pathways of site-related COPCs, 3) evaluate the risks to human health and ecological receptors, and 4) develop the information needed to support the FS. Results of the RI were presented in the *Focused Remedial*

Investigation, Collinsville Smelter Site (Exponent, 2001). Selected tables and figures from this report are presented in Appendix A-5.

In addition to sample collection, a visual survey was conducted along Blackjack Creek to map any smelter materials present. This survey resulted in the identification of smelter materials in the creek. The field staff indicated that smelter materials generally appeared to be localized in several areas where retention dams had previously been placed (Exponent, 2001).

The following samples were collected and analyzed for lead (and in some instances arsenic, cadmium, and zinc) as part of the Collinsville Smelter RI (Exponent, 2001):

- Soil samples were collected on-site and off-site. Areas targeted for off-site sampling included: former properties owned by the Bartelsville Zinc Company, a pasture area west of the site, residences, day-care centers, and playfields located near the site.
- Sediment samples were collected from streambeds or drainage ditches that received runoff from the Collinsville Smelter site or TFM. Additionally, background sediment samples were collected.
- Air samples were collected on two occasions from two locations: one upwind and one downwind of the site.
- Groundwater samples were collected from seven wells located in the vicinity of the site.

The following observations were made regarding the samples and results (Exponent 2001):

Soil

Elevated concentrations of arsenic, cadmium, lead, and zinc were noted in the on-site soil samples. Elevated concentrations generally coincided with the occurrence of smelter waste and generally decreased with depth.

For the off-site sampling, locations north and west of the site exhibited lead concentrations in excess of three times the background value. None of the targeted sampling locations (i.e., residences, playfields, or day care centers) exhibited lead concentrations in excess of three times the background value (Exponent, 2001). However, out of the 102 off-site properties that were targeted for sampling, access was only granted at 64 percent of the locations. Therefore, it is possible that a sufficient number of properties adjacent to the Collinsville Smelter were not sampled in order to effectively determine the nature and

extent of off-site contamination (See Figure 3-2 and 3-3 in Appendix A-5).

Sediment

Following review of historical and RI data, it was noted that nine samples collected upstream of the Collinsville Smelter site exhibited concentrations of either arsenic, cadmium, lead, and zinc in excess of three times the background concentration. Additionally, sediment samples from five of the 11 locations placed downstream but relatively close to the Collinsville Smelter exhibited concentrations of arsenic, cadmium, lead or zinc in excess of background concentrations. Sediment samples collected from locations farthest downstream from the site did not exhibit results in excess of background values (Exponent, 2001).

Air

Air particulate samples were collected on two occasions from locations upwind and downwind of the site. Results for the upwind and downwind samples were similar, suggesting that the site did not affect air quality (Exponent, 2001).

Groundwater

Groundwater samples were collected from wells in the vicinity of the site. Lead was the only constituent detected at concentrations above the drinking water standard. Lead exceedences were noted in two wells (Exponent, 2001).

1.3 REPORT ORGANIZATION

The sections of the RI Report are as follows:

- Section 1.0 – Introduction
- Section 2.0 – Field Investigation Activities and Technical Approach
- Section 3.0 – Physical Characteristics
- Section 4.0 – Nature and Extent of Contamination
- Section 5.0 – Contaminant Fate and Transport
- Section 6.0 – Human Health Baseline Risk Assessment
- Section 7.0 – Ecological Evaluation
- Section 8.0 – Summary and Conclusions

- Section 9.0 – References

This RI Report references and relies upon information that is presented in the following documents:

- *Remedial Investigation/Feasibility Study Phase I Preliminary Data Report for Tulsa Fuel and Manufacturing, Collinsville, Oklahoma* (RI/FS PI Data Report) (BMcD, 2006)
- *Remedial Investigation/Feasibility Study Work Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma* (RI/FS Work Plan) (BMcD, 2005e)
- *Remedial Investigation/Feasibility Study Sampling and Analysis Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma. Volume I, Field Sampling Plan*, (RI/FS FSP) (BMcD, 2005c)
- *Remedial Investigation/Feasibility Study Sampling and Analysis Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma. Volume II, Quality Assurance Project Plan*, (RI/FS QAPP) (BMcD, 2005d)
- *Remedial Investigation/Feasibility Study Health and Safety Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma* (RI/FS HSP) (BMcD, 2005b)
- *Remedial Investigation/Feasibility Study Data Management Plan, Tulsa Fuel and Manufacturing, Collinsville, Oklahoma* (RI/FS DMP) (BMcD, 2005a)

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2.0 FIELD INVESTIGATION AND TECHNICAL APPROACH

The purpose of the RI was to determine the nature and extent of on-site contamination, the nature and extent of potential off-site contamination, and to assess the potential risks to human health and the environment caused by such contamination. To accomplish these goals samples were collected from apparent waste deposition areas, soils surrounding the TFM, on-site and off-site surface water and sediment, vegetation, and air. The RI activities were primarily conducted in two phases (Phase I and Phase II). Phase I RI activities were performed in accordance with the RI/FS Work Plan (BMcD, 2005e). Phase II RI activities were performed according to the original work plan in conjunction with additional data collection activities presented in the RI/FS PI Data Report (BMcD, 2006). Additional related plans describing the implementation process of the RI/FS were utilized, including the RI/FS FSP (BMcD, 2005c) and RI/FS QAPP (BMcD, 2005d). Unless otherwise noted, sample collection and field procedures adhered to standard operating procedures (SOPs) presented in the RI/FS FSP and RI/FS PI Data Report.

Phase I field activities were conducted from July 11 through October 4, 2005. Phase I activities included the collection of the following data:

- Off-site surface soil samples
- On-site surface soil, subsurface soil, and waste material samples
- On-site and off-site surface water and sediment samples
- Groundwater samples
- Ecological/vegetation samples
- Air Monitoring samples

During Phase I, several of the planned surface water sampling locations were dry and it was difficult to obtain sufficient groundwater samples from the monitoring wells to collect all planned analyses. These surface water locations and monitoring wells were revisited during the rainy season from May 8 through 12, 2006 for purposes of finalizing the RI Phase I data collection effort. The RI/FS PI Data Report (BMcD, 2006) compiled and tabulated all the sampling data obtained during the Phase I and May 2006 field activities.

After review of the Phase I RI data, it was determined that additional RI sampling was necessary to further define the nature and extent of contamination. The planned sample collection was outlined in the RI/FS PI Data Report (BMcD, 2006). Phase II field activities were conducted from August 14 through September 21, 2005. Phase II activities included the collection of the following data:

- Off-site surface soil samples
- On-site surface soil and subsurface soil
- On-site and off-site surface water and sediment samples
- Groundwater samples
- Ecological/vegetation samples
- Investigation Derived Waste (IDW) Samples

The following tables summarize the RI sample collection activities, including the parameters that were tested for each matrix:

- Table 2-1 – Background Soil Boring Sample Collection Summary
- Table 2-2 – On-Site Soil Boring Sample Collection Summary
- Table 2-3 – On-Site Trench Sample Collection Summary
- Table 2-4 – Off-Site Surface Soil Sample Collection Summary
- Table 2-5 – Surface Water Sample Collection Summary
- Table 2-6 – Sediment Sample Collection Summary
- Table 2-7 – Groundwater Sample Collection Summary
- Table 2-8 – Ecological/Vegetation Sample Collection Summary
- Table 2-9 – Perimeter Air Monitoring Sample Collection Summary

Phase I and Phase II RI activities are discussed in this section of the RI Report. The following appendices are included to provide additional details regarding field activities and the data collection effort:

- Appendix B – Boring Logs
- Appendix C – Trench Diagrams
- Appendix D – Off-Site Sampling Database of Properties and Addresses
- Appendix E – Surface Water Field Parameters
- Appendix F – Monitoring Well Information, including well construction diagrams, well development forms, groundwater field parameters, survey data, and groundwater sampling forms
- Appendix G – Photographs
- Appendix H – IDW Inventory

CRC & Associates (Cherokee America Drilling) of Tulsa, Oklahoma provided direct-push and drilling services for the RI. Trenching was performed by Bingham Resources, Inc. of Tulsa, Oklahoma. In addition, L.W. Survey Company of Tulsa, Oklahoma established an on-site benchmark and provided survey coordinates (including elevations) for monitoring wells and piezometers.

Primary analytical services for the RI/FS were provided by the Oklahoma State Environmental Laboratory (SEL). SEL provided the analysis of soil, sediment, and water matrices for metals, toxicity characteristic leaching procedure (TCLP) metals, and general water chemistry parameters. BMcD subcontracted the services of Severn Trent Laboratories (STL) of Burlington, Vermont for analysis of the ecological/vegetation and air samples. In addition, DEQ contracted Quantem Laboratories of Oklahoma City, Oklahoma to provide asbestos analysis for one sample collected near the former smokestack.

2.1 ON-SITE SOIL AND WASTE INVESTIGATION

Surface and subsurface soil samples were collected on-site to determine the presence and extent (horizontal and vertical) of contamination. Subsurface soil samples also aided in the determination of the nature of contamination, the potential risk the contamination posed to human health and the environment, and the most appropriate method of remediation. Direct-push sampling techniques were used to collect soils in on-site areas where slag-like materials did not provide subsurface obstruction. In contrast, trench sampling techniques were used to collect samples on-site in apparent areas of waste deposition. The intent of the trenching activities was to characterize the area of maximum deposition surrounding the former smelter operations area.

2.1.1 Background Soil Borings

Background surface and subsurface soil boring sampling locations were selected to represent the various soil types present at the TFM. Locations with soils similar to the TFM site were selected following review of the *Soil Survey of Tulsa County, Oklahoma* (United States Department of Agriculture [USDA], 1977). The predominant soil types identified at the site were Okemah-Parsons-Carytown complex and Dennis-Radley complex. In addition, a small area of the Kanima series was also identified at the south of the property, closest to the Strip Mine Pit. Soils of the Okemah-Parsons-Carytown complex consist of acidic, silty loam to silty clay and are typically found on slopes between 0 and 1 percent. Soils of the Dennis-Radley complex consist of loamy and clayey sediments under native grasses and cover of oak trees and are typically found on very gently sloping uplands and floodplains. The Kanima soils consist of a shaley, silty clay loam, have moderate to low permeability, and normally form on slopes greater than 3 percent within strip mining areas.

Background soil samples were collected from seven boring locations, BG-SP-01 through BG-SP-07. The sampling locations are presented within the inset to Figure 2-1 and are also shown on Figure 2-2.

Samples were collected from the surface (0 to 6 inches below ground surface [bgs]), shallow subsurface (6 inches to 2 ft bgs), and deeper subsurface (2 to 4 ft bgs). A sample could not be collected from the 2 to 4 ft bgs interval at location BG-SP-06 due to refusal at 2.2 ft bgs. Samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using X-Ray Fluorescence Spectroscopy (XRF). Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using Inductively Coupled Plasma (ICP) was performed using shallow subsurface sample BG-SP-01/SS02 and surface soil sample BG-SP-04/SS01. Samples BG-SP-01/SS02 and BG-SP-04/SS01 were also prepared using the toxicity characteristic leaching procedure (TCLP) and subsequently analyzed for arsenic, cadmium, and lead using ICP techniques. Table 2-1 presents the background soil boring sample collection summary.

2.1.2 On-Site Soil Borings

Table 2-2 provides an on-site soil boring sample collection summary, and boring logs are presented in Appendix B. Figure 2-1 presents the on-site sampling locations. Sample names beginning with “SP-“ or “PZ-“ represent on-site soil boring samples. During Phase I RI activities, soil samples were collected using direct-push sampling techniques from 53 sample points that were placed in a 200-ft grid pattern where slag-like materials did not present subsurface obstruction. Samples were collected from the surface interval (0 to 6 inches bgs) at all 53 sampling locations. Additionally, samples were collected from the shallow subsurface (6 inches to 2 ft bgs) and deeper subsurface (2 to 4 ft bgs) at 45 of these sampling locations. Soil samples were also collected during the installation of three temporary piezometers. At the

temporary piezometer locations, samples were collected at depth intervals of 0 to 6 inches bgs, 6 inches to 2 ft bgs, 2 to 4 ft bgs, and 4 to 8 ft bgs. In addition, soil samples were collected from 8 to 10.5 ft bgs at two of the temporary piezometer locations. All samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for 16 samples and three field duplicates. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

Collection of soil samples from seven additional locations along the perimeter of the TFM property was conducted during Phase II RI activities to better define the horizontal and vertical extent of contamination. Phase II RI soil boring locations include borings SP-54 through SP-60. Samples were collected from the surface (0 to 6 inches bgs) and shallow subsurface (6 inches to 2 ft bgs). At location SP-56, samples were also collected from the deeper subsurface (2 to 4 ft bgs). Phase II samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for two samples and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead. Samples that exhibited metals results in excess of the XRF calibration range were reanalyzed using ICP techniques to obtain results within calibration during Phase II RI activities.

In addition to collection of additional samples for purposes of defining the horizontal and vertical extent of contamination, reanalysis of selected samples collected during RI Phase I was conducted by SEL during RI Phase II. Reanalysis was required for soil boring samples that exhibited results for one or more metals in excess of the XRF calibration range. In order to provide a precise data set to perform an accurate risk assessment using the on-site soil samples, reanalysis of samples with XRF results in excess of the calibration range was performed using ICP analysis techniques. Use of ICP methodology allowed for sample dilution so that precise results within the instrument calibration range could be obtained. The samples and metals selected for reanalysis are noted on Table 2-2.

2.1.3 On-Site Test Pits/Trenches

Table 2-3 provides an on-site trench sample collection summary, and trench diagrams are presented in Appendix C. Figure 2-1 presents the on-site sampling locations. Sample names beginning with “TR-“ represent on-site soil and/or waste samples collected from a trench. Soil and/or waste samples were collected from 21 on-site sampling locations in areas of apparent waste deposition using trench sampling techniques during Phase I RI activities. Samples were collected at the surface (0 to 6 inches bgs) and from native clay under the waste material at all sampling locations. Additionally waste samples from

mid-depth in the trench were collected from 10 of the trenches. All samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for five samples and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

In addition to collection of additional samples for purposes of defining the horizontal and vertical extent of contamination, reanalysis of selected samples collected during RI Phase I was conducted by SEL during RI Phase II. Reanalysis was required for trench samples that exhibited results for one or more metals in excess of the XRF calibration range. In order to provide a precise data set to perform an accurate risk assessment using the on-site soil and waste samples, reanalysis of samples with XRF results in excess of the calibration range was performed using ICP analysis techniques. Use of ICP methodology allowed for sample dilution so that precise results within the instrument calibration range could be obtained. The samples and metals selected for reanalysis are noted on Table 2-3.

2.2 OFF-SITE SURFACE SOIL INVESTIGATION

Surface soil samples were collected from off-site locations to determine the presence and extent of contamination due to potential aerial distribution of contaminants from the TFM smokestack. Additionally, off-site surface soil samples were collected to identify off-site locations where historical placement of on-site waste materials occurred. On-site waste materials were historically removed for use as fill material, gravel in driveways and roads, and gardening material.

At a minimum, off-site surface soil samples were collected from 0 to 3 inches bgs. A shallower depth interval was selected for the off-site surface samples as compared to the on-site samples to avoid overly diluting disperse aerial deposition. That is, the probability of emissions from the TFM smokestack being present below 3 inches bgs was expected to be minimal given its limited years of operation, and the concentration of metal constituents below this depth was expected to be at or near background. At locations where the residential screening level for lead was exceeded in the 0 to 3 inch interval, additional samples were collected from 3 inches to 12 inches bgs to characterize the vertical extent of metals. When possible, sample locations were not be placed adjacent to buildings, roadways, or railroad sidings to minimize the likelihood of non-smelter materials (i.e., leaded paint, leaded gas, etc.) affecting results. Appendix D contains a list of off-site sampling locations and addresses.

A hand-held XRF was used during collection of surface soil samples from off-site locations to provide the approximate concentration of metals in off-site surface soil. Use of the instrument provided immediate

feedback regarding the off-site sampling grid and any need for additional sample collection to define extent. However, all samples selected for field XRF analysis were also submitted to the SEL for analysis of metals in a laboratory setting. The field-analyzed samples were used as a screening tool, and the laboratory-analyzed samples were used for decision-making purposes.

2.2.1 Background Surface Soil Samples

Background surface soil sampling locations were selected to represent the various soil types present at the TFM. Locations with soils similar to the TFM site were selected following review of the *Soil Survey of Tulsa County, Oklahoma* (USDA, 1977). The predominant soil types identified at the site were Okemah-Parsons-Carytown complex and Dennis-Radley complex. In addition, a small area of the Kanima series was also identified at the south of the property, closest to the Strip Mine Pit. Soils of the Okemah-Parsons-Carytown complex consist of acidic, silty loam to silty clay and are typically found on slopes between 0 and 1 percent. Soils of the Dennis-Radley complex consist of loamy and clayey sediments under native grasses and cover of oak trees and are typically found on very gently sloping uplands and floodplains. The Kanima soils consist of a shaley, silty clay loam, have moderate to low permeability, and normally form on slopes greater than 3 percent within strip mining areas.

Background surface soil samples were collected from seven locations, BG-OSL-01 and BG-OSL-07. The background surface soil sampling locations are shown on Figure 2-2. Samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF, and confirmation analysis using ICP was performed for Samples BG-OSL-01/SS01 and BG-OSL-06/SS01. Samples BG-OSL-01/SS01 and BG-OSL-06/SS01 were also prepared using TCLP and analyzed for arsenic, cadmium, and lead. Table 2-4 presents the background surface soil sample collection summary.

2.2.2 RI Phase I Off-Site Grid and “Distance” Sampling Locations Surface Soil

Off-site grid surface soil sampling locations were placed on approximate 500-ft centers in a grid composed of 71 locations surrounding the site. The grid was oriented in the prevailing north-south wind direction, and was also adjusted based on the placement of the Targeted Off-Site Samples and Tribal Residence Samples discussed in Sections 2.2.3 and 2.2.4. During RI Phase I activities, composite surface soil samples were collected from 47 locations and discrete grab samples were collected from two driveways. Access agreements could not be obtained for 24 of the planned sampling locations.

In addition, off-site “distance” surface soil sampling locations were placed at distances of ½ mile, 1 mile, and 1 ½ miles from the TFM at 22 locations to determine the long-range extent of aerial deposition of

metals and historical placement. Prevailing winds in the area are north, north-northwest, south, and south-southeast. “Distance” sampling locations were placed at 1 mile and 1 ½ miles from the TFM in the prevailing wind directions. The off-site grid sampling locations were sufficient to capture the ½ mile interval in the prevailing wind directions. Since there is less of an easterly or westerly component to winds in the area, “distance” sampling locations in the east and west direction were only placed at ½ mile and 1 mile from the TFM. Access agreements could not be obtained for 15 of the planned “distance” sampling locations, and composite surface soil samples were collected from seven “distance” sampling locations during RI Phase I activities.

Both off-site grid and “distance” samples were labeled with a sample prefix of “OSL-” (Figure 2-2). Composite samples were prepared by collecting samples from the four corners and center of an approximate 10-foot grid, homogenizing the soil, and placing the homogenized sample in an appropriate sample container. Samples were then submitted to SEL and analyzed for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for five samples and three field duplicates. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead (Table 2-4).

2.2.3 RI Phase I Targeted Off-Site Sampling Locations Surface Soil

A survey was conducted of the area to target high-interest sampling locations such as parks, schools, play grounds, day care centers, etc. Based on this survey, eight locations were targeted for sample collection during RI Phase I activities. The locations were labeled with a sample prefix “TSL-” (Figure 2-2). Samples were collected from all of these locations except planned location TSL-08/SS01, which was placed to confirm data collected during the *Focused Remedial Investigation, Collinsville Smelter Site* (Exponent, 2001). Seven samples and one field duplicate were then submitted to SEL and analyzed for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for one sample and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead (Table 2-4).

2.2.4 RI Phase I Tribal Member Properties Surface Soil

Based on information provided by the Inter-Tribal Environmental Council (ITEC), surface soil samples were collected from tribal residence locations that were located in the vicinity of the TFM. Based on this information, 10 locations were selected for sample collection during RI Phase I activities. An eleventh location, TRB-11, was added during field activities at a property selected for development by the Cherokee Nation Housing Authority. Since access agreements were not granted for five of the tribal

member residences, six tribal residence locations were sampled. The locations were labeled with a sample prefix “TRB-” (Figure 2-2). Six samples and one field duplicate were then submitted to SEL and analyzed for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for one sample and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead (Table 2-4).

2.2.5 RI Phase II Off-Site Surface Soil Sample Collection

2.2.5.1 Locations with Lead Results in Excess of Residential Screening Levels

Samples collected from 12 locations during RI Phase I exhibited lead results in excess of residential screening levels. These locations included OSL-12, OSL-36, OSL-39, OSL-40, OSL-49, OSL-96, OSL-97B, TRB-08, TRB-09, TRB-09DW, TRB-10, and TSL-05. Planned sample collection during RI Phase II activities included revisiting these sampling locations, and collecting additional samples from 3 to 12 inches bgs to define the vertical extent of metals in soil. These locations were named with an “A” as a suffix to the original sample name. For example, RI Phase I location OSL-12, which had a sample collected from 0 to 3 inches bgs, was revisited during RI Phase II as location OSL-12A with a sample collected from 3 to 12 inches bgs to define the vertical extent of metals.

In order to define the horizontal extent of metals at locations that exhibited lead results in excess of residential screening levels, planned samples collection during RI Phase II activities included collection of samples from locations that were offset 50 feet to the north, east, south, and west of the original locations. These offset locations were named with suffixes “B”, “C”, “D”, and “E” to the original sample name (Table 2-4). Continuing the previous example, samples were collected 50 feet to the north, east, south, and west of RI Phase II location OSL-12A and were labeled as OSL-12B through OSL-12E. At each of these locations, samples were collected from two depth intervals: 0 to 3 inches bgs and 3 to 12 inches bgs to define the horizontal and vertical extent of metals in the soil. It is important to note that Figure 2-2 only presents the “A” sampling locations. Due to the scale of Figure 2-2, it was not feasible to present offset locations “B” through “E”. Exceptions to this planned sample collection strategy are noted in the following paragraphs:

- OSL-40, OSL-40A through OSL-40E – Samples were collected as planned. Based upon field XRF results and visual observations of potential smelter waste, additional samples were collected to the east (locations OSL-40CC and OSL-40CCC) and southeast (OSL-40DD). Since this property was formerly part of the Bartlesville Zinc Company and the sample collection was

moving toward the direction of the Collinsville Smelter Site, sample collection was not pursued beyond locations OSL-40CCC and OSL-40DD.

- OSL-49, OSL-49A through OSL-49E – Samples were collected as planned. Based upon field XRF results and visual observations of potential smelter waste, additional samples were collected to the south (locations OSL-49DD) and west (location OSL-49EE).
- OSL-96, OSL-96A through OSL-96E – Location OSL-96/OSL-96A was located in the northwest corner of the property. Since the offset for location OSL-96B would have been off the selected property in a location where access had not been obtained, it was not collected.
- OSL-97, OSL-97A through OSL-97G – The sample naming was adjusted based on the presence of existing locations labeled “A” and “B”. Location OSL-97A was placed during RI Phase I activities on the property at (b) (6). Location OSL-97B was placed during RI Phase I activities on the property at (b) (6). Additional sampling was planned for the property located at (b) (6) during RI Phase II activities. At the northern step out location (OSL-97D), the field crew noted that they had left the property at (b) (6) and were on the property at (b) (6). In particular, locations OSL-97A and OSL-97D were co-located on the property at (b) (6). Locations OSL-97B, OSL-97C, and OSL-97E through OSL-97G were located on the property at (b) (6).
- TRB-08, TRB-08A through TRB-08E – Since the offset for location OSL-08D would have been in the right-of-way for (b) (6), it was not collected. Traces of apparent smelter waste and materials that appeared to be broken retorts were observed at locations TRB-08/TRB08A and TRB-08B.
- TRB-09, TRB09A through TRB-09E – Since the offset locations for TRB-09C and TRB-09D would have been off of the selected property in a location where access had not been obtained or in the road right-of-way, these samples were not collected.
- TRB-09DW, TRB-09DWA through TRB-09DWE – During RI Phase I activities, a driveway that appeared to be composed of smelter waste materials was observed at location TRB-09DW (See photograph in Appendix G) and a composite sample was collected. This driveway was not longer evident during RI Phase II activities, and the residents at the location provided differing information regarding its existence. Additionally, the residents would not allow access for

collection of samples in the vicinity of the location where the driveway was believed to have been.

Forty three (43) samples and six field duplicates were collected from the 0 to 3 inch bgs interval, and 51 samples and five field duplicates were collected from the 3 to 12 inch bgs interval. These samples were submitted to SEL and analyzed for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for 11 samples and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead (Table 2-4).

2.2.5.2 Locations with Results in Excess of XRF Calibration Range

In addition to collection of additional samples for purposes of defining the horizontal and vertical extent of contamination, reanalysis of off-site residential driveway sample TRB09DW/SS01 was conducted by SEL during RI Phase II. Since this sample exhibited arsenic, lead, and zinc results in excess of the XRF calibration range, reanalysis of the sample was performed using ICP analysis techniques to provide a precise data set for use in the nature and extent discussion and risk assessment. Use of ICP methodology allowed for sample dilution so that precise results within the instrument calibration range could be obtained.

2.2.5.3 Additional Samples for Delineation of Off-Site Properties

Additional locations were selected for sampling during RI Phase II in order to better define the nature and extent of off-site contamination. In particular, the area directly east of the TFM and adjacent to the railroad tracks was targeted for sampling at locations OSL-100 through OSL-103, which are shown on Figure 2-2. Samples were collected from two depth intervals: 0 to 3 inches bgs and 3 to 12 inches bgs. Eight samples and one field duplicate were submitted to SEL for analysis of arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for one sample and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead (Table 2-4).

One residential yard located at [REDACTED] (b) (6) [REDACTED] in Collinsville, Oklahoma was sampled at the request of the property owner. This sample is labeled TSL-09 on Figure 2-2. Samples were collected from two depth intervals: 0 to 3 inches bgs and 3 to 12 inches bgs. Two samples were collected and submitted to SEL for analysis of arsenic, cadmium, lead, and zinc using XRF.

Property access agreements were difficult to obtain in certain areas during RI Phase I. These locations were shown as Areas 1 through 4 on Figure 4-3 of the RI/FS PI Data Report (BMcD, 2006). These areas were revisited during RI Phase II to determine if adjacent property owners were willing to grant access agreements for the purpose of collecting surface soil samples. Based upon access granted during RI Phase II activities, two locations each were sampled within or near Area 1 (locations OSL-104 and OSL-105), two locations were sampled within or near Area 2 (locations OSL-106 and OSL-107), three locations were sampled within or near Area 3 (locations OSL-108, OSL-109, and OSL-111), and two locations were sampled within Area 4 (OSL-113 and OSL-114). Samples were collected from 0 to 3 inches bgs. Eight samples and one field duplicate were submitted to SEL for analysis of arsenic, cadmium, lead, and zinc by XRF (Table 2-4).

2.3 SURFACE WATER AND SEDIMENT INVESTIGATION

Surface water and sediment samples were collected to assess the potential of waste migration to the surrounding streams, ponds, and strip mine pit. Surface water and sediment samples also aided in the determination of the nature of any contamination present, the potential risk the contamination may pose to human health and the environment, and the most appropriate method for remediation. Surface water and sediment samples were collected at locations where surficial transport of contaminants might have occurred.

2.3.1 Background Surface Water and Sediment Samples

Background surface water and sediment samples were collected from two locations, BG-OFF-01 and BG-OFF-02 during RI Phase I activities. During RI Phase II activities, surface water and sediment samples were collected from three locations in a farm pond located upgradient from the TFM. These sampling locations are labeled as sampling points FP-01 to FP-03. The background sampling locations are presented on Figure 2-3. Locations for surface water and sediment sampling were co-located. To avoid excessive turbidity in the samples, surface water was collected prior to collection of sediment. Field duplicate samples for surface water and sediment were collected at locations BG-OFF-01 and FP-02. Background surface water samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using ICP. In addition, surface water samples were also analyzed for the general chemistry parameters of total organic carbon (TOC), chemical oxygen demand (COD), alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate as indicated on Table 2-5. The temperature, pH, and specific conductivity of the surface water samples were also measured in the field, and this data is presented in Appendix E. Background sediment samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF as indicated on Table 2-6.

Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for the sediment sample and field duplicate collected at location FP-02. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

2.3.2 RI Phase I Surface Water and Sediment Collection

All surface water bodies on the TFM were selected for surface water and sediment sampling. This included three large ponds assumed to be associated with the former reservoir, two smaller ponds, the strip mine pit, and an intermittent drainage (i.e., mid-site ravine) that cuts through the main area of waste deposition. Off-site sampling locations included drainages along the rights-of way for the Old US 169 / Railroad corridor and drainages in the northern and southern portions of Tulsa County Plat 34010 in Sec 32 T22N R14E, which is east of the TFM and Old US 169. Appendix D contains a list of off-site sampling locations and addresses.

Thirty-one sample points were chosen for surface water and sediment sample collection; however 15 of these sample points were devoid of surface water at the time of sampling in July 2005. These locations were revisited in May 2006, and surface water was able to be collected at that time. Table 2-5 provides a surface water sample collection summary, and Table 2-6 provides a sediment sample collection summary. Figure 2-3 presents the sampling locations. Locations for surface water and sediment sampling were co-located. All surface water samples were analyzed by SEL for arsenic, cadmium, lead, zinc using ICP. Surface water samples were also analyzed for the general chemistry parameters of TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate. Temperature, pH, and specific conductivity were also measured in the field. Results for the field-measured parameters are presented in Appendix E.

Thirty-one sediment samples were collected from 18 on-site and 13 off-site locations during RI Phase I activities. Of these, dry sediment was collected from five on-site and 10 off-site locations. Sediment samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for three sediment samples and one field duplicate. These samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

2.3.3 RI Phase II Surface Water and Sediment Collection

Eight additional surface water and sediment sampling locations were planned as part of RI Phase II activities. In order to insure the presence of surface water during the sampling event, these samples were collected during the rainy season in May 2006 prior to the main RI Phase II activities in August 2006.

Phase II RI surface water and sediment sampling locations included the following (See also Figure 2-3):

- On-site cistern – A surface water sample was collected from the on-site cistern. Sediment was not present and could not be collected.
- Drainage for Rights-of-Way of Old US 169 / Railroad - Surface water and sediment were collected from four locations associated with the Old US 169 / Railroad rights-of-way. These locations included OFF-16 through OFF-19.
- Northern Drainage on (b) (6) – Four additional surface water and sediment samples were planned for collection from the northern drainage on the Tate property. These locations included OFF-14, OFF-15, OFF-20, and OFF-21. Since the field sampling team determined that location OFF-21 was not on (b) (6), samples were not collected from this location due to lack of an access agreement.

Surface water samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using ICP. In addition, surface water samples were also analyzed for the general chemistry parameters of TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate as indicated on Table 2-5. The temperature, pH, and specific conductivity of the surface water samples were also measured in the field, and this data is presented in Appendix E. Sediment samples were analyzed by SEL for arsenic, cadmium, lead, and zinc using XRF as indicated on Table 2-6. Additionally, confirmation analysis for arsenic, cadmium, lead, and zinc using ICP was performed for the sediment sample collected at location OFF-15. This sample was also prepared using TCLP and analyzed for arsenic, cadmium, and lead. Sediment samples that exhibited metals results in excess of the XRF calibration range were reanalyzed using ICP techniques to obtain results within calibration during Phase II RI activities.

In addition to collection of sediment samples for purposes of defining the horizontal extent of contamination, reanalysis of selected samples collected during RI Phase I was conducted by SEL during RI Phase II. Reanalysis was required for sediment samples that exhibited results for one or more metals in excess of the XRF calibration range. In order to provide a precise data set to perform an accurate risk assessment using the sediment samples, reanalysis of samples with XRF results in excess of the calibration range was performed using ICP analysis techniques. Use of ICP methodology allowed for sample dilution so that precise results within the instrument calibration range could be obtained. The samples and metals selected for reanalysis are noted on Table 2-6.

2.4 GROUNDWATER INVESTIGATION

Groundwater samples were collected to determine the nature and extent of potential groundwater contamination. Groundwater samples were collected in a staged approach. Direct-push techniques were used to install temporary piezometers at the TFM, which were used to determine groundwater flow in the area. Following determination of groundwater flow direction using the temporary piezometers, monitoring wells were installed to evaluate the impact to groundwater, if any, at the TFM boundaries (upgradient and downgradient) and downgradient of suspected sources of contamination.

2.4.1 Phase I Temporary Piezometer Installation and Sampling

Eleven (11) temporary piezometers were installed during RI Phase I activities for groundwater sample collection and groundwater flow evaluation (see Section 3.6). Figure 2-4 presents the temporary piezometer locations. The locations of the piezometers were selected primarily to evaluate the occurrence of groundwater and determine groundwater flow direction.

Each temporary piezometer was installed with the screened interval located at the base of the overburden material (i.e., top of bedrock) in accordance with Oklahoma Water Resources Board (OWRB) rules OAC 785:35 (OAC, 2004a). Following installation, each temporary piezometer was surveyed in order to obtain horizontal coordinates and top of casing elevation data.

Table 2-7 provides a groundwater sample collection summary for the temporary piezometers. Unfiltered groundwater was collected from nine of these temporary piezometers on September 13, 2005 using a peristaltic pump. Piezometers PZ-10 and PZ-11 were not sampled due to an insufficient volume of water. Groundwater samples were submitted to SEL as unfiltered samples and analyzed for arsenic, cadmium, lead, and zinc. If sufficient water was present, samples were also collected and analyzed for general chemistry parameters including TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate.

Upon completion of Phase I investigation activities, each temporary piezometer was abandoned according to OWRB rules OAC 785:35 (OAC, 2004a).

2.4.2 Phase I Monitoring Well Installation and Sampling

Five monitoring wells were installed at the TFM during RI Phase I activities. The locations of the five monitoring wells were selected to best characterize the site based on known or estimated source locations and to further evaluate groundwater flow direction. One upgradient well (MW-01) was installed to serve as a background well for the TFM. Monitoring Well MW-01 is located upgradient of the source area (as

indicated by groundwater flow direction obtained from the temporary piezometers) and is unlikely to be impacted by historical site use. Four additional monitoring wells (MW-02 to MW-05) were installed in the source area to evaluate potential contaminant impacts to groundwater.

All Phase I monitoring wells were installed using a hollow-stem auger drilling techniques in accordance with OWRB rules OAC 785:35. Each monitoring well was screened over a 5-ft interval at the base of the overburden material (i.e., top of bedrock). Following installation, each monitoring well was developed in accordance with SOP TFM-107 which is provided in the RI/FS FSP. Additionally, each monitoring well was surveyed in order to obtain horizontal coordinates and top of casing elevation data. Monitoring well boring logs, construction details, well development forms, field sampling forms, construction diagrams, and survey data are located in Appendices B and F.

Monitoring Wells MW-01 to MW-05 were sampled on September 29, 2005, and the existing residential well (RW-01) was sampled on October 3, 2005. All wells were sampled using disposable polyethylene bailers. Due to turbidity observed during sample collection, an unfiltered and field-filtered sample was submitted for MW-05. Groundwater samples from all other wells were submitted to SEL unfiltered. Samples were analyzed by SEL for arsenic, cadmium, lead, and zinc. Additionally, samples from Monitoring Wells MW-01, MW-03, and MW-04 were analyzed for general chemistry parameters including TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate. Table 2-7 presents the 2005 monitoring well groundwater sample collection summary. Temperature, pH, specific conductivity, and turbidity were also measured in the field. Results for the field-measured parameters are presented in Appendix F.

Due to the limited occurrence of groundwater during the initial groundwater sampling event, a second round of monitoring well sampling was conducted on May 11 and 12, 2006. The second round of groundwater sampling was conducted to obtain a full set of analytical and field data for RI Phase I activities. Field-filtered samples were collected from Monitoring Wells MW-01 through MW-04 and RW-01 for analysis of arsenic, cadmium, lead, and zinc. In addition, Monitoring Wells MW-02 and MW-05 were sampled for general chemistry parameters. All samples were analyzed by SEL. Table 2-7 presents the May 2006 monitoring well groundwater sample collection summary. Temperature, pH, specific conductivity, and turbidity were also measured in the field. Results for the field-measured parameters are presented in Appendix F.

During RI Phase I activities, water level and total depth measurements were collected from the existing residential well (RW-01). Depth to water measurements ranged from approximately 7 to 8 feet bgs. This

information differs from available historical information which indicated a depth to water of 35 feet bgs. Total depth measurements from RW-01 also indicated differing results. Total depth measurements collected during RI Phase I activities indicated a total depth of approximately 30 feet bgs as compared to historical data which indicated a total depth for RW-01 of 50 feet bgs (OSDH, 1992a).

2.4.3 Phase II Monitoring Well Installation and Sampling

Two additional monitoring wells were installed during Phase II activities. The locations of the monitoring wells were selected to further evaluate the potential occurrence of groundwater within the bedrock beneath the TFM and monitor the potential migration of dissolved metals (specifically cadmium) in the downgradient direction of the TFM.

Monitoring Well MW-04D was installed adjacent to Monitoring Well MW-04 to determine if sufficient groundwater is present within the bedrock. This location was selected due to the presence of elevated metals within dissolved phase groundwater at Monitoring Well MW-04. The overburden material was drilled using hollow-stem auger drilling techniques. Upon reaching refusal (approximately 10 feet bgs), a 6-inch PVC casing was grouted in place to seal off the groundwater within the overburden from the potential bedrock water bearing zones. Following sufficient curing time, coring drilling techniques were then utilized to drill through bedrock to a depth of approximately 50 feet bgs. The monitoring well was then installed screening only the bedrock zone.

A second monitoring well, MW-06, was installed to the east of the TFM, downgradient of Monitoring Well MW-04 to evaluate the potential migration of dissolved metals offsite. The location of this well was selected based on groundwater flow direction observed during Phase I activities. Monitoring Well MW-06 was installed at the base of the overburden material (top of bedrock) using hollow-stem auger drilling techniques.

Following installation of Monitoring Wells MW-04D and MW-06, each monitoring well was developed in accordance with SOP TFM-107 which is provided in the RI/FS FSP. Additionally, each monitoring well was surveyed in order to obtain horizontal coordinates and top of casing elevation data. Monitoring well construction details, survey data, well development forms, field sampling forms, construction diagrams, and drilling logs are located in Appendices B and F.

Following proper development of the Phase II monitoring wells, groundwater samples were collected from all 8 site wells, including the Phase I and Phase II monitoring wells and the residential well. Due to

the presence of dissolved solids during previous Phase I sampling events, groundwater samples were collected using a peristaltic pump and Teflon-lined polyethylene tubing. Peristaltic pumps allow groundwater samples to be retrieved with little disturbance to the sample matrix and at minimal flow rates. Samples were collected in accordance with SOP TFM-130, "Groundwater Sampling Utilizing a Peristaltic Pump".

Groundwater samples were collected from each well and submitted to SEL for analysis of arsenic, cadmium, lead, and zinc, and general water chemistry parameters (TOC, COD, alkalinity, nitrate as nitrogen, sulfate, and chloride). Due to insufficient sample volume, TOC was not collected for Monitoring Wells MW-01 and MW-02. Samples for analysis of metals were submitted to the SEL as both field-filtered and unfiltered samples to determine the impact of sample turbidity upon the results. A groundwater sample collection summary is provided in Table 2-7. Temperature, pH, specific conductivity, and turbidity were also measured in the field. Results for the field-measured parameters are presented in Appendix F.

2.5 ECOLOGICAL / VEGETATION INVESTIGATION

Fish tissue samples that were collected by USEPA during the 1999 Removal Assessment represent the only historical collection of ecological samples from the TFM. Results of the fish tissue samples were provided in Section 1.2.3.3.

People have been observed collecting blackberries from bushes growing in the eastern fence line of the TFM. In some instances, these bushes appear to be growing in slag-like waste materials. Fruit and vegetation from the blackberry bushes were collected during three growing seasons to evaluate the presence of metals in berries and leaves that may be ingested by human and/or ecological receptors. Vegetation sampling conducted in support of the RI/FS during the 2004, 2005, and 2006 growing seasons represent the first collection of blackberry bush data for the TFM. Samples were collected of blackberries (washed and unwashed), leaves from the blackberry bushes (washed and unwashed), roots from the blackberry bushes (washed), and soils surrounding the roots. Washed and unwashed samples were collected in order to monitor metals uptake versus aerial deposition of metals. Samples of unwashed blackberries and leaves were used to represent metals content due to aerial deposition. Samples of washed blackberries and leaves were used to represent metals content due to plant uptake.

2.5.1 Background Ecological/Vegetation Sampling

Background ecological/vegetation samples were collected from the Oxley Nature Center in Tulsa, Oklahoma during the 2004 and 2005 growing seasons. Additional sampling of blackberries was planned during the 2006 growing season, but blackberries were not present at the Oxley Nature Center during the July 2006 sampling event. Samples were collected of blackberries (washed and unwashed), leaves from the blackberry bushes (washed and unwashed), roots from the blackberry bushes (washed), and soils surrounding the roots. The samples were analyzed by STL Burlington for arsenic, cadmium, lead, and zinc. In addition, soil samples were analyzed for pH. A summary of background ecological/vegetation sample collection is presented on Table 2-8.

2.5.2 Ecological/Vegetation Sampling

Table 2-8 provides an ecological/vegetation sample collection summary. Figure 2-4 presents the ecological/vegetation sampling locations. Ecological/vegetation samples were collected at the TFM site and in the surrounding area during the 2004, 2005, and 2006 growing seasons. Samples were collected by DEQ at three locations in June 2004. Sample points for the 2004 event consisted of two locations along the eastern boundary of the TFM, which were labeled “TFM” and one location on the 10710 E 136th Street N property adjacent to the TFM, which was labeled “BM”. Samples were also collected during RI Phase I activities at two locations in June 2005. Sample points for the 2005 event consisted of one location at the TFM, which was labeled “EC-02,” and one location on the [REDACTED] (b) (6) [REDACTED] property adjacent to the TFM, which was labeled “EC-01”. During both events, blackberry bushes were sampled for blackberries (washed and unwashed), leaves (washed and unwashed), roots (washed), and soils from the root area. The samples were analyzed by STL Burlington for arsenic, cadmium, lead, and zinc. Additionally, pH analysis was performed on soils and wastes collected from the root area. Three of the soil and waste samples that were collected from the root area were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

A third round of ecological/vegetation sampling was conducted during Phase II RI activities in 2006 to provide data from an additional growing season for analysis. Sample points for the July 2006 event consisted of one location at the TFM, which was labeled “EC-02,” and one location on the [REDACTED] (b) (6) [REDACTED] property adjacent to the TFM, which was labeled “EC-01.” Sample collection was limited to blackberry samples and the associated wash water (i.e., rinsate). Washed and unwashed samples of the blackberries were collected. In addition, the water that was used to wash the berries was collected. Samples of unwashed blackberries were used to represent metals content due to aerial deposition. Analyzing the rinse water provided additional details regarding metals that had been aerially deposited on

the berries, and subsequently removed by washing. Samples of washed blackberries were used to represent plant uptake. The samples were submitted to STL Burlington for analysis of arsenic, cadmium, lead, and zinc.

2.6 PERIMETER AIR MONITORING INVESTIGATION

Perimeter air monitoring samples were collected from two locations to evaluate air quality at the TFM. Sampling locations were selected to provide a representative worst-case scenario at technically feasible sampling locations based upon winds, precipitation, proximity to waste source, access, and land use associated with downwind areas. Continuous perimeter air monitoring was conducted from August 24 through 30, 2005 (i.e., 24-hours of continuous sampling over seven days using high volume air samplers). Filters were changed daily during the sampling event, and the filters were submitted to STL Burlington for analysis of total suspended particulate (TSP), small particulate matter less than 10 microns (PM₁₀), and airborne particulate metals (arsenic, cadmium, lead, and zinc). Table 2-9 provides the sample collection summary, and the sampling locations are presented on Figure 2-4 as locations AQ-01 and AQ-02.

Based on wind rose data obtained from the Tulsa International Airport (See Appendix I), it was anticipated that the southern sampling station, AQ-02, would serve as the upwind or background location and northern sampling station, AQ-01, would serve as the downwind or investigative location for the entire sampling event. In contrast to expectations based upon historical data, the wind direction was variable during the sampling event. Winds were predominantly from the south during the first three days of sampling and switched to the north during the last four days of sampling after a weather front moved through the area. Therefore, the identity of the upwind, background sampling location and downwind, investigative sampling location was determined daily based upon the prevailing wind at the time of sampling, as follows:

- Upwind, background location: The upwind, background sampling point was identified as the southern station, AQ-02, for the first three days of sampling and the northern station, AQ-01, for the last four days of sampling.
- Downwind, investigative location: The downwind, investigative sampling point was identified as the northern station, AQ-01, for the first three days of sampling and the southern station, AQ-02, for the last four days of sampling.

During the sampling event, daytime high temperatures varied between 90 to 96 degrees Fahrenheit (°F) and overnight lows varied between 79 to 84 °F. The average humidity varied from 63 to 75 percent. Strong storms were noted on Day 3 as a front moved through the area, and approximately 0.66 inches of precipitation fell during the storm event. Average winds speeds ranged from 4 to 10 miles per hour (mph), and gusts from 12 to 26 mph were noted.

2.7 INVESTIGATION DERIVED-WASTE MANAGEMENT

Twelve (12) drums of soil IDW were generated during on-site direct-push sampling activities, temporary piezometer installation, and monitoring well installation. In addition, eight drums of liquid IDW were generated during monitoring well development and purging. An IDW Inventory Worksheet is provided in Appendix H. Two samples of the liquid IDW were collected and submitted to SEL for analysis of arsenic, cadmium, lead, and zinc by ICP. Results of the IDW analysis are also provided in Appendix H.

2.8 ASBESTOS SAMPLING

DEQ conducted a site visit to the TFM in September 2006. During this site visit, a sample of materials from the former TFM smokestack was collected. The sample was submitted to Quantem Laboratories of Oklahoma City, Oklahoma for analysis of asbestos by polarized light microscopy. Asbestos was not present in the sample.

* * * * *

3.0 PHYSICAL CHARACTERISTICS

This section summarizes current knowledge of the TFM physical characteristics, including location, general description, surface features, climatology, surface water hydrology, hydrogeology, geology and soils, demography, and ecology.

3.1 SURFACE FEATURES

A site feature map is presented as Figure 3-1. Previous reports indicated that the TFM consists of approximately 50 acres (OSDH, 1992); however, measurement of the area inside the TFM boundary indicated on Figure 3-1 is approximately 60.7 acres. The majority of the facility structures have been demolished. Previous studies have indicated that approximately seven (7) acres of the site are covered with approximately 30,000 cubic yards of waste consisting of broken retorts and condensers, slag, building debris, ash, bricks, and other materials from the former smelting operations (DEQ, 2005b). During the RI, waste materials were visually observed at the surface or within borings or trenches across approximately 25 acres. This waste area is located to the south of the access road/driveway (Figure 3-1 and Appendix G) and included Ponds 1, 2 and 3. In addition, the access road/driveway was observed to contain waste materials. The waste piles are not covered, and run-off is uncontrolled. The waste borders the southern strip mine impoundment, and portions of the waste have collapsed into the impoundment (Appendix G). This impoundment, which receives surface water runoff from the TFM, is reportedly a local fishery and flows into an intermittent drainage ditch (eastern wetlands, Figures 1-2 and 3-1) that borders on the eastern edge of the waste (DEQ, 2005b). An intermittent stream originates in this area and flows approximately $\frac{3}{4}$ mile before draining into Blackjack Creek, which is located east of the TFM (Figure 1-1). It has been reported that the southern impoundment is connected hydraulically with the intermittent stream and that the stream receives surface water runoff from the site (OSDH, 1992); however, this connection was not observed during RI activities. Three intermittent ponds, which are assumed to be remnants of the 2-million gallon reservoir, are located north of the former smelter operation area (DEQ, 2005b). A retort embankment was observed lining Pond 3 during RI activities (Appendix G). In addition, two smaller ephemeral ponds are located on the TFM (Figures 1-2 and 3-1). The area north of the access road/driveway is vegetated with grasses (Figures 1-2 and 3-1).

A residence (Figures 1-2 and 3-1), which was occupied from 1935 through February 2002, was located on the site near the former office building (paymaster hut). The on-site residence was destroyed by a fire and is currently unoccupied (Appendix G). The residence has a water well, which was used in the past for

drinking water (DEQ, 2005b). A cistern is located just north of the intermittent drainage that travels west to east across the southern portion of the TFM (Figures 1-2 and 3-1).

3.2 METEOROLOGY

Located in northeast Oklahoma, approximately 22 miles north of Tulsa, the TFM primarily has a continental climate, with pronounced daily and seasonal temperature changes. Summers are hot and fairly humid, with average high temperatures in July and August above 90 °F and average low temperatures slightly above 70 °F during these months. Winters are fairly short and mild, with January typically being the coldest month. The average high temperature in January is 46 °F, and the average low temperature is 26 °F (National Weather Service [NWS], 2005).

Severe weather storms with strong winds, hail, thunder/lightning storms, and tornadoes occur primarily between the months of March and June. From 1888 to present, the average annual rainfall was 42.4 inches. May was the wettest month, with average monthly rainfall of 6.1 inches (NWS, 2005). The record 24-hour rainfall was 9.27 inches and occurred during the month of May. Between 1950 and 2000, 68 tornadoes were reported in Tulsa County, which averages just over one per year (Oklahoma Climatological Society [OCS], 2005).

Snowfall is infrequent, with an average of approximately 9.2 inches per year. Snow primarily occurs from December through March. January has the highest monthly average snowfall of 3 inches (NWS, 2005).

Prevailing surface winds as measured at the Tulsa International Airport are from the south at an average approximate velocity of 10.7 mph (National Water and Climate Center [NWCC], 2005). In the winter months from November through March, winds are variable with predominant directions from the south, south-southeast, north, and north-northwest. During the spring season from April to May, winds are predominantly from the south and south-southeast. During the summer and fall, there is also a south-southwesterly component to the predominant winds (NWCC, 2005). Wind rose data from the Tulsa International Airport is provided in Appendix I.

3.3 SURFACE WATER HYDROLOGY

Surface water is present at the TFM in several ponds and intermittent drainages. A surface impoundment from a former strip mining pit comprises the southern boundary of the TFM. Water from this strip pit impoundment flows into an intermittent drainage ditch (also described as the eastern wetlands) that

borders the eastern edge of the site near the waste piles (DEQ, 1994). Three intermittent ponds, which are assumed to be remnants of an old reservoir, are located in the area north of the former smelter operations area and south of the access road/driveway (Labeled as Ponds 1, 2, and 3 on Figures 1-2 and 3-1). Pond 3 contains a retort embankment, which were serving as part of the bank structure for the pond. During a site visit in November 2006, Pond 1 was nearly dry and Ponds 2 and 3 were dry due to a drought in the area (See Photographs in Appendix G).

Additionally, two smaller ephemeral ponds have been identified on the property, one located just northwest of the larger three ponds (Pond 4) and the other located near the western boundary of the TFM (Pond 5). Based on observations during RI activities, these ponds are likely only present for brief periods following rain events. Ponds 4 and 5 were dry during RI Phase I sampling activities, and samples had to be collected during the rainy season in May 2006. These ponds were also observed to be dry during the November 2006 site visit (See Photographs in Appendix G).

A culvert passes under the Atchinson Topeka Santa Fe Railroad and Old US 169, and surface water from the TFM passes through this culvert and onto a ponded area on Tulsa County Plat 34010 in Sec 32 T22N R14E, portions of which were owned by the former Bartelsville Zinc Company. Northern flow from this ponded area was observed during a rain event in May 2006.

The overall surface drainage is to the east, towards Blackjack Creek, a meandering stream located to the east of the TFM (Figure 1-1). Blackjack Creek flows northerly for approximately five miles until it meets Horsepen Creek, which in turn flows approximately two miles easterly before meeting the Caney River (DEQ, 1994). The Caney River has been designated for the following uses by the State of Oklahoma: public and private water supply, warm water aquatic community, class I irrigation, industrial and municipal process and cooling water, primary body contact recreation beneficial use, and aesthetics beneficial use (OAC, 2004). The major recreational water body in the Collinsville area is Oolagah Lake, located approximately 15 miles to the northeast. Oolagah Lake is also the source of drinking water for the city of Collinsville and the rural water supplies (OSDH, 1992).

3.4 GEOLOGY

Collinsville is located in the North American Central Lowlands physiographic province. The terrain is characterized by nearly level uplands, bottomlands around the major streams, and gentle, rolling hills. The TFM topography is generally flat with an elevation of approximately 650 ft above mean sea level (msl) and elevations within a one-mile radius of the TFM ranging from 620 to 740 ft msl.

According to the geologic map of Oklahoma, the geologic strata underlying the TFM consists of shale and sandstone with interbedded coal deposits of the Pennsylvanian-aged Seminole Formation (Miser, 1954). The Seminole Formation, generally exhibiting a thickness of 200 ft, is divided into an upper sandstone, a middle shale, and a basal sandstone (Tulsa Geological Survey [TGS], 1972). The middle shale zone locally contains the Dawson Coal, up to 30 inches thick, which was mined locally in the Collinsville area. Underlying the Seminole Formation is the Pennsylvanian Holdenville Shale, composed of shale with minor sandstone and limestone strata.

Based on information obtained during the Phase I and Phase II investigations, bedrock was encountered beneath the TFM at depths ranging from 7.2 to 12.5 ft bgs. Initial bedrock encountered at TFM consisted primarily of shale, with a few instances of sandstone and limestone (refer to boring logs provided in Appendix B).

3.5 SOILS

The TFM vicinity is underlain by unconsolidated overburden that primarily consists of silt, clay, silty loam, and shale sediments and residuum. The unconsolidated overburden at the TFM is relatively thin and consist primarily of the Kanima Series and the Okemah-Parson-Carytown complex and Dennis-Radley complex (USDA, 1977). In addition, a small area of the Kanima series was also identified at the south of the property, closest to the Strip Mine Pit. Soils of the Okemah-Parsons-Carytown complex consist of acidic, silty loam to silty clay and are typically found on slopes between 0 and 1 percent. Soils of the Dennis-Radley complex consist of loamy and clayey sediments under native grasses and cover of oak trees and are typically found on very gently sloping uplands and floodplains. The Kanima soils consist of a shaley, silty clay loam, have moderate to low permeability, and normally form on slopes greater than 3 percent within strip mining areas.

Smelter operation waste material, consisting of broken retorts and condensers, slag, building debris, ash, and bricks was identified within the southeast area of the TFM property (refer to Figure 3-1). The occurrence of the waste material increased toward the southeast of the TFM property, where discrete zones of slag material were encountered. Where encountered, the discrete zones of slag material were primarily found at or near the ground surface with thicknesses ranging from approximately 0.5 ft to 7.0 ft bgs. Smelter operation waste material was also identified along the access road/driveway located within the TFM boundaries.

Geologic cross-sections of the Site were prepared from boring logs and survey data to detail the approximate depths and locations of soils and waste material encountered. The geologic cross-sections are presented in Figures 3-2a and 3-2b. A plan view of the geologic cross-section profile locations is provided on Figure 3-2.

3.6 HYDROGEOLOGY

No major bedrock or alluvial aquifers lie beneath the site. The Seminole Formation, the upper bedrock aquifer beneath the TFM, consists of shale, sandstone, and thin coal beds and has a thickness of approximately 200 ft. The Seminole Formation reportedly yields small amounts of fair to poor quality water and has been designated Class IIB as a minor use general basin (OAC, 2004). There are no municipal or other public water wells or Wellhead Protection Areas within a 4-mile radius of the TFM. A water well search identified several private wells located within a one-mile radius of the TFM, including a residential well located on the TFM property. The identified wells varied in depth from 32 ft to 200 ft bgs and exhibited yields ranging from one to 40 gallons per minute (gpm). No yield data was available from the on-site residential well.

To evaluate groundwater flow beneath the TFM, water level data was collected from temporary piezometers and monitoring wells installed during RI Phase I and Phase II activities. Eleven temporary piezometers and five monitoring wells were installed during RI Phase I. Each temporary piezometer and monitoring well was installed at the base of the overburden material. During Phase II activities, two additional monitoring wells were installed, one within the bedrock, and the other at the base of the overburden (see Section 2.4 for piezometer and well installation details). Based on RI Phase I and Phase II activities, the occurrence of groundwater beneath the site is very limited, however, it does appear to be continuous across the TFM. Table 3-1 provides groundwater elevation data collected during RI Phase I and Phase II activities. A potentiometric surface map generated by piezometer measurements collected on August 31, 2005 is provided as Figure 3-3. Potentiometric surface maps using monitoring well measurements for May 8, 2006 and September 18, 2006 are provided as Figures 3-4 and 3-5, respectively. As indicated on the figures, groundwater flow beneath the TFM occurs in a south/southeasterly direction.

3.7 DEMOGRAPHY AND LAND USE

The TFM is located approximately 1 1/3 miles south of downtown Collinsville. According to the 2000 Census, Collinsville has a population of 4,077 (United States Census Bureau, 2003). Of these, approximately 2,978 are under the age of 18. Collinsville covers approximately 3 square miles of developed area, of which 80 percent is residential and 20 percent is commercial and industrial (Smith,

2000). The TFM is outside of the developed area of Collinsville but is within its corporate limits. This area is mostly rural with agricultural land use. There is some dispersed residential use (permanent homes and trailers) in the area.

3.8 ECOLOGY

The TFM is vegetated by various grass species, trees, and shrubs creating diverse habitat types. There are areas of dense vegetation interspersed with sparsely vegetated areas and patches of bare or rocky ground.

Species of wildlife that likely occur on the TFM include bullsnake (*Pituophis melanoleucus*), Woodhouse's toad (*Bufo woodhousei*), box turtle (*Terrapene sp.*), common garter snake (*Thamnophis sirtalis*), black ratsnake (*Elaphe obsoleta*), racer (*Coluber constrictor*), fox squirrel (*Sciurus niger*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), red fox (*Vulpes fulva*), coyote (*Canis latrans*), white-footed mouse (*Peromyscus leucopus*), eastern cottontail (*Sylvilagus floridanus*), white-tailed deer (*Odocoileus virginianus*), killdeer (*Charadrius vociferous*), mourning dove (*Zenaida macroura*), cooper's hawk (*Accipiter cooperii*), red-winged blackbird (*Agelaius phoeniceus*), American robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), and scissor-tailed flycatcher (*Tryannus forficatus*). These are common species that are typically found in areas that exhibit varying amounts of disturbance.

According to the Oklahoma Natural Heritage Inventory (ONHI) database (ONHI, 2003), the following protected species are known or are likely to occur in Tulsa County:

Common Name	Scientific Name	Federal Status	State Status
American Burying Beetle	<i>Nicrophorus americanus</i>	Endangered	Endangered
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Endangered
Least Tern	<i>Sterna antillarum</i>	Endangered	Endangered
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	--	Candidate

Prior to the start of the RI, a survey was conducted for the American Burying Beetle at the TFM site. None were present on the TFM. A copy of the survey is provided in Appendix J.

Several additional protected terrestrial and aquatic species have the potential to be present within the general area (OSDH, 1992); however, based on topography and surface features, only the federally threatened western prairie fringed orchid (*Platanthera praeclara*) and the prairie mole cricket (*Gryllotalpa major*), a species that is proposed for federal listing, could potentially be present at the TFM.

Based on evidence of hunting (i.e., decoys present in the on-site ponds), waterfowl are present at least some time during the year. During a site visit conducted during USEPA's Removal Assessment, local fishermen reported that catfish and bass were present in the southern strip mine pit (USEPA, 1999).

* * * * *

4.0 NATURE AND EXTENT OF CONTAMINATION

Section 4.0 describes the nature and extent of soil, surface water, sediment, groundwater, vegetation, and air contamination at the TFM. This section includes nature and extent information presented previously in the RI/FS PI Data Report (BMcD, 2006) and incorporates additional information based on work conducted during Phase II of the RI field activities.

4.1 INTRODUCTION TO DATA PRESENTATION

4.1.1 Screening of Data

Section 4.0 presents a summary of sample analyses, analytical results, and exceedences of potential chemical-specific to-be-considered (TBC) criteria for samples collected as part of the RI Phase I and Phase II field activities. Tables 4-1 through 4-5 present the potential chemical-specific TBC criteria that were originally presented in the RI/FS Work Plan (BMcD, 2005e). The discussion in Section 4.0 includes a comparison of sample results to these TBC criteria (i.e., screening levels). Constituents that exceed TBC criteria are highlighted in the data summary for each media of interest. Important details regarding this screening include:

- Non-detect results are not included in the screening process for purposes of the nature and extent of contamination discussion.
- If a constituent's concentration exceeded more than one of the screening levels, then the color associated with the highest screening level was used for highlighting that constituent on the data summary tables.

Table 4-6 presents a description of analytical data qualifiers for all analyses. These data qualifiers were either assigned by the SEL or STL Burlington during analysis or assigned by the project chemist during data validation and review. Comprehensive laboratory analytical data are included in Appendix K, and memos summarizing QA/QC data reviews (i.e., validation) are provided in Appendix L. Table 4-6 provides a description of data qualifiers used as part of the RI.

4.1.2 Background Data Summary

During RI Phases I and II samples were collected from locations in the surrounding area that were identified as having no impact from previous TFM activities. These background samples were collected

to provide a data set for comparison to investigative samples collected during the RI. The background data set was used to identify constituent concentrations that may be present due to natural occurrences or activities that were not related to TFM. The background samples were collected using the same procedures as investigative samples and analyzed for the same constituents as the investigative samples. Background samples were collected from each of the following media during RI field activities: subsurface soil, surface soil, sediment, surface water, groundwater, ambient air, and vegetation. The background sample locations for the various media are presented on Figure 4-1. With the exception of soil media, which is discussed in the following paragraphs, discussion of the project-specific background sample collection protocol and presentation of background sample analytical results is presented with the applicable media in Sections 4.4 through 4.7.

In addition to collection of project-specific data, a literature search was conducted to identify background concentrations of metals in soil for the region. The results of this literature search are provided on Table 4-7. A summary of the regional background concentration ranges for arsenic, cadmium, lead, and zinc in soil is as follows:

- Arsenic – 3.4 to 25.3 mg/kg
- Cadmium – 0.77 to 5.9 mg/kg
- Lead – 10 to 379 mg/kg
- Zinc – 42 to 1,280 mg/kg

Background surface and subsurface soil sampling locations were selected to represent the various soil types present at the TFM. Locations with soils similar to the TFM site were selected following review of the *Soil Survey of Tulsa County, Oklahoma* (USDA, 1977). Background soil sampling locations included BG-OSL-01 through BG-OSL-07 and BG-SP-01 through BG-SP-07. Samples were collected from the 0 to 0.25 ft, 0 to 0.5 ft, 0.5ft to 2 ft, and 2 to 4 ft bgs intervals. Results for the background soil samples are presented on Table 4-8. Summary statistics for the 95 percent upper confidence limit (UCL) and maximum detected concentration are also presented on Table 4-8. A summary of the range of concentrations of arsenic, cadmium, lead, and zinc across all depth intervals in the background soil samples is as follows:

- Arsenic – Non-detect (10 mg/kg reporting limit) – 16 mg/kg

- Cadmium – Non-detect (10 mg/kg reporting limit)
- Lead – Non-detect (20 mg/kg reporting limit) – 40 mg/kg
- Zinc – Non-detect (50 mg/kg reporting limit) – 196 mg/kg

Background soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Based on this comparison, the 95 UCL for arsenic in the 0 to 0.5 ft and 0.5 to 2 ft bgs soil depth intervals exceeded the USEPA Region VI screening levels for industrial indoor workers, industrial outdoor workers, and residential soil. The 95 UCL for lead in background soil exceeded USEPA Region VI screening levels for ecological receptors for samples collected from the 0 to 0.5 ft bgs and 2 to 4 ft bgs depth intervals.

4.2 ON-SITE SOIL AND WASTE

Surface and subsurface soil samples were collected on-site to determine the presence and extent (horizontal and vertical) of contamination. Subsurface soil samples also aided in the determination of the nature of contamination, the potential risk the contamination posed to human health and the environment, and the most appropriate method of remediation. Direct-push sampling techniques were used to collect soils in on-site areas where slag-like materials did not provide subsurface obstruction. In contrast, trench sampling techniques were used to collect samples on-site in apparent areas of waste deposition. The intent of the trenching activities was to characterize the area of maximum deposition surrounding the former smelter operations area. A summary of on-site soil and waste sample collection is presented in Section 2.1.

Review of the on-site soil and waste area was divided into two areas: 1) areas of the TFM site where waste materials were not visually observed during sample collection or in the boring logs (i.e. on-site non-waste areas), and 2) areas of the TFM site where waste materials were visually observed during sample collection or in the boring logs (i.e., on-site waste areas). Results for the on-site samples are presented on Tables 4-9 through 4-12. Soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24. The results for lead in on-site soil and waste samples are presented on Figure 4-2. Lead detections that exceed the USEPA Region VI

residential soil screening level are highlighted in red on this figure.

4.2.1 On-Site Non-Waste Area Soil

The on-site non-waste area is presented with a white background on Figures 2-1 and 4-2. The on-site non-waste area is approximately 36 acres in size. Sample results for on-site non-waste area soil samples are presented on Tables 4-9 and 4-10. A summary by metal and depth interval is provided in the following paragraphs. Background values are included for comparison.

Arsenic, cadmium, lead, and zinc were detected in soil samples collected from the TFM, primarily at depths above 2 ft bgs. The results for lead in on-site soil samples are presented on Figure 4-2. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. A summary of the arsenic, cadmium, lead, and zinc results follows:

Arsenic Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
Concentration Range (mg/kg)	10 U – 416	10 U – 102	10 U – 12	18	10 U
Background Data Concentration Range (mg/kg)	10 U – 10	10 U – 16	10 U	NA	NA
95 UCL for Background Data (mg/kg)	6.67	9.62	10 U	NA	NA
Number of sampling locations, including duplicates	57	51	42	1	1
Number of sampling locations with arsenic detections	41	7	2	1	0
Locations with results > 95 UCL of background	41	7	2	NA	NA
Locations with results > ecological screening level (31 mg/kg)	29	4	0	0	0
Locations with results > industrial indoor worker screening level (3.8 mg/kg)	41	7	2	1	0
Locations with results > industrial outdoor screening level (1.8 mg/kg)	41	7	2	1	0
Locations with results > residential soil screening level (0.39 mg/kg)	41	7	2	1	0

Cadmium Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
Concentration Range (mg/kg)	10 U – 799	1 U – 124	1 U – 67	1 U	10 U
Background Data Concentration Range (mg/kg)	1 U – 10 U	1 U – 10 U	10 U	NA	NA
95 UCL for Background Data (mg/kg)	1 U	1 U	10 U	NA	NA
Number of sampling locations, including duplicates	57	51	42	1	1

Cadmium Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
duplicates					
Number of sampling locations with cadmium detections	50	12	2	0	0
Locations with results > 95 UCL of background	50	12	2	NA	NA
Locations with results > ecological screening level (0.4 mg/kg)	50	12	2	0	0
Locations with results > industrial indoor worker screening level (1,000 mg/kg)	1	0	0	0	0
Locations with results > industrial outdoor screening level (560 mg/kg)	1	0	0	0	0
Locations with results > residential soil screening level (39 mg/kg)	16	7	1	0	0

Lead Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
Concentration Range (mg/kg)	20 U – 5,170	20 U – 1,690	20 U – 208	40	20 U
Background Data Concentration Range (mg/kg)	20 U – 40	20 U – 14	20 U – 34.7	NA	NA
95 UCL for Background Data (mg/kg)	17.1	11.68	32.1	NA	NA
Number of sampling locations, including duplicates	57	51	42	1	1
Number of sampling locations with lead detections	55	21	5	1	0
Locations with results > 95 UCL of background	55	20	1	NA	NA
Locations with results > ecological screening level (15 mg/kg)	55	20	4	1	0
Locations with results > industrial indoor worker screening level (800 mg/kg)	17	3	0	0	0
Locations with results > industrial outdoor screening level (800 mg/kg)	17	3	0	0	0
Locations with results > residential soil screening level (400 mg/kg)	31	4	0	0	0

Zinc Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
Concentration Range (mg/kg)	460 – 41,400	57 – 8,280	50 U – 1,270	84	170
Background Data Concentration Range (mg/kg)	50 U – 196	50 U – 120	50 U – 115	NA	NA
95 UCL for Background Data (mg/kg)	103	92.2	86.6	NA	NA
Number of sampling locations, including duplicates	57	51	42	1	1
Number of sampling locations with zinc detections	57	51	37	1	1
Locations with results > 95 UCL of background	57	42	11	NA	NA
Locations with results > ecological	57	39	9	0	1

Zinc Results and Exceedance Summary					
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft	8 – 10.5 ft
screening level (120 mg/kg)					
Locations with results > industrial indoor worker screening level (100,000 mg/kg)	0	0	0	0	0
Locations with results > industrial outdoor screening level (100,000 mg/kg)	0	0	0	0	0
Locations with results > residential soil screening level (23,000 mg/kg)	2	0	0	0	0

TCLP metals analyses were performed for approximately 10 percent of the soil samples collected on-site.

A summary of the TCLP results for samples collected from the non-waste area and exceedences of the regulatory screening level are provided in Table 4-10. TCLP metal results in excess of screening levels indicate that the soil at the sampling location should be considered hazardous by characteristic.

TCLP Results and Exceedance Summary				
Depth Interval (bgs)	0 – 0.5 ft	0.5 – 2 ft	2 – 4 ft	4 – 8 ft
Number of sampling locations, including duplicate samples	10	4	3	1
Number of locations with TCLP arsenic detections	0	0	0	0
Locations with TCLP arsenic > 5 mg/L	0	0	0	0
Number of locations with TCLP cadmium detections	10	4	0	0
Locations with TCLP cadmium > 1 mg/L	1	0	0	0
Number of locations with TCLP lead detections	6	0	0	0
Locations with TCLP lead > 5 mg/L	0	0	0	0

The on-site non-waste area is approximately 36 acres and is shown with a white background on Figure 4-2. Approximately 25 acres of the non-waste area contains soil samples with lead results in excess of the 400 mg/kg residential screening level in the 0 to 0.5 ft bgs interval. Horizontally, the highest concentrations of metals in the non-waste area were observed south and west of the access road/driveway (See Figure 4-2). Maximum concentrations in this area were 416 mg/kg of arsenic, 799 mg/kg of cadmium, 5,170 mg/kg of lead, and 41,400 mg/kg of zinc. Concentrations of metals in samples collected nearest the northern and eastern TFM boundaries in the non-waste area exhibited the lowest on-site metal concentrations, and the horizontal extent of metals was established in this area. The horizontal extent of metals in the non-waste area was less clearly defined along the western TFM boundary, and samples collected from the properties directly west of the TFM exhibited concentrations of lead that exceeded the residential soil screening value. However, sampling conducted on these properties did define the western extent of contamination relative to the TFM site (See Section 4.3.4 for further discussion of off-site properties).

Metal concentrations decrease as sample depth increases. The on-site contamination in the non-waste area is primarily located in the top 0 to 0.5 ft of soil, with small areas in the vicinity of sampling locations SP-19, SP-26, and SP-29 exhibiting lead results in excess of the residential screening level up to 2 ft bgs.

These locations were in close proximity to the access/road driveway and waste area. Very few exceedences of screening levels were noted in samples collected below 2 ft bgs, and these results were similar to background concentrations.

Results for the TCLP analysis performed on sample collected from the non-waste are presented on Table 4-10. The sample collected from the 0 to 0.5 ft bgs interval at location SP-36 exhibited results for TCLP cadmium that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure, soil at this location would be classified as hazardous. This was the only location in the non-waste area that exhibited a TCLP failure.

4.2.2 On-Site Waste Area Samples

The on-site waste area is presented with a tan background on Figures 2-1 and 4-2. The on-site waste area, including the ponds, is approximately 25 acres in size. Sample results for on-site non-waste area soil samples are presented on Tables 4-11 and 4-12. A summary by metal and depth interval is provided in the following paragraphs. Background values are included for comparison.

Arsenic, cadmium, lead, and zinc were detected in waste samples collected from the waste area of the TFM. The results for lead in on-site soil waste are presented on Figure 4-2. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. A summary of the arsenic, cadmium, lead, and zinc results follows:

Arsenic Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Concentration Range (mg/kg)	39 – 1,170	10 U - 703	10 U – 18
Background Data Concentration Range (mg/kg)	10 U – 10	10 U – 16 (0.5 – 2 ft)	10 U (2 – 4 ft)
95 UCL for Background Data (mg/kg)	6.67	9.62	10 U
Number of sampling locations, including duplicates	40	26	34
Number of sampling locations with arsenic detections	40	23	2
Locations with results > 95 UCL of background	40	23	2
Locations with results > ecological screening level (31 mg/kg)	40	21	0

Arsenic Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Locations with results > industrial indoor worker screening level (3.8 mg/kg)	40	23	2
Locations with results > industrial outdoor screening level (1.8 mg/kg)	40	23	2
Locations with results > residential soil screening level (0.39 mg/kg)	40	23	2

Cadmium Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Concentration Range (mg/kg)	10 U - 1,620	10 U - 691	1 U - 76
Background Data Concentration Range (mg/kg)	1 U – 10 U	1 U – 10 U (0.5 – 2 ft)	10 U (2 – 4 ft)
95 UCL for Background Data (mg/kg)	1 U	1 U	10 U
Number of sampling locations, including duplicates	40	26	34
Number of sampling locations with cadmium detections	39	25	3
Locations with results > 95 UCL of background	39	25	3
Locations with results > ecological screening level (0.4 mg/kg)	39	25	3
Locations with results > industrial indoor worker screening level (1,000 mg/kg)	2	0	0
Locations with results > industrial outdoor screening level (560 mg/kg)	6	3	0
Locations with results > residential soil screening level (39 mg/kg)	37	22	2

Lead Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Concentration Range (mg/kg)	705 – 61,600	20 U – 25,200	20 U - 215
Background Data Concentration Range (mg/kg)	20 U - 40	20 U – 14 (0.5 – 2 ft)	20 U – 34.7 (2 – 4 ft)
95 UCL for Background Data (mg/kg)	17.1	11.68	32.1
Number of sampling locations, including duplicates	40	26	34
Number of sampling locations with lead detections	40	25	8
Locations with results > 95 UCL of background	40	25	4
Locations with results > ecological screening level (15 mg/kg)	40	25	8
Locations with results > industrial indoor worker screening level (800 mg/kg)	39	21	0

Lead Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Locations with results > industrial outdoor screening level (800 mg/kg)	39	21	0
Locations with results > residential soil screening level (400 mg/kg)	40	21	0

Zinc Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (1 up to 10.5 ft)
Concentration Range (mg/kg)	2,030 – 165,000	472 – 104,000	50 U – 4,380
Background Data Concentration Range (mg/kg)	50 U -196	50 U – 120 (0.5 – 2 ft)	50 U – 115 (2 – 4 ft)
95 UCL for Background Data (mg/kg)	103	92.2	86.6
Number of sampling locations, including duplicates	40	26	34
Number of sampling locations with zinc detections	40	26	33
Locations with results > 95 UCL of background	40	26	17
Locations with results > ecological screening level (120 mg/kg)	40	26	11
Locations with results > industrial indoor worker screening level (100,000 mg/kg)	6	1	0
Locations with results > industrial outdoor screening level (100,000 mg/kg)	6	1	0
Locations with results > residential soil screening level (23,000 mg/kg)	26	9	0

TCLP metals analyses were performed for approximately 10 percent of samples collected from soil borings and 50 percent of the samples collected from trenches in the on-site waste area. A summary of the TCLP results and exceedences of the regulatory screening level are provided in Table 4-12 and below.

TCLP metal results in excess of screening levels indicate that the waste at the sampling location should be considered hazardous by characteristic.

TCLP Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (2 up to 6 ft)
Number of sampling locations, including duplicate samples	3	5	2
Number of locations with TCLP arsenic detections	1	1	0
Locations with TCLP arsenic > 5 mg/L	0	0	0
Number of locations with TCLP cadmium detections	3	5	1
Locations with TCLP cadmium > 1 mg/L	1	5	0

TCLP Results and Exceedance Summary			
Depth Interval (bgs)	Shallow 0 – 0.5 ft	Mid-Depth in Waste (0.5 up to 5 ft)	Native Clay (2 up to 6 ft)
Number of locations with TCLP lead detections	3	5	0
Locations with TCLP lead > 5 mg/L	1	3	0

The on-site waste area is approximately 25 acres and is shown with a tan background on Figure 4-2. Smelter waste materials (slag, broken retorts, etc.) were visually observed at the ground surface or within trenches or soil borings placed in this area. The waste area also includes the access road/driveway, which was constructed of smelter waste materials. The entire waste area contains soil samples with lead results in excess of the 400 mg/kg residential screening level in the 0 to 0.5 ft bgs interval. Horizontally, the highest concentrations of metals in the waste area were observed in the south and southwest portion of the TFM and appeared to be associated with the former smelter operations area. Maximum concentrations in this area were 1,170 mg/kg of arsenic, 1,620 mg/kg of cadmium, 71,700 mg/kg of lead, and 165,000 mg/kg of zinc. The horizontal extent of contamination in the waste area was defined to the north and west by soil borings placed in the non-waste area. The southern extent of the waste area was defined at the Strip Mine Pit, and waste slag piles were observed to have collapsed within the Strip Mine Pit (See Section 4.4.8 for a discussion of Strip Mine Pit sediment). Soil samples collected off-site south of the Strip Mine Pit did not exhibit elevated metals results (See Table 4-13 and Figure 4-3). The eastern edge of the waste area was noted at the property boundary; however, waste materials were noted outside of the fenceline in a low area between the TFM boundary and the Atchinson Topeka Santa Fe Railroad right-of-way (See results for locations OSL-100 and OSL-101 on Table 4-13 and Figure 4-3). The railroad, which was constructed in 1899 prior to operation of the smelter, acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks.

Metal concentrations decrease as sample depth increases. The vertical extent of contamination varied across the waste area. On the west side of Pond 3 near the on-site residence, waste was generally encountered to approximately 1 ft bgs. Across much of the waste area, waste materials varied in thickness between 2 to 3 ft bgs. Waste materials were observed up to 5 ft deep in the area between Pond 1 and Pond 2 and the area between Pond 2 and Pond 3. In addition, waste materials were observed up to 7 ft bgs across the length of the former smelter operations area. A summary of the vertical extent of contamination is provided in the following table.

Vertical Extent of Waste Materials			
Approximate Waste Thickness	Percentage of Waste Area	Impacted Area in Acres (Does not Include Ponds)	Volume in Cubic Yards
1 ft thick	10%	2.3	3,700
2 ft thick	50%	11.5	37,100
3 ft thick	15%	3.45	16,700
6 ft thick	25%	5.75	55,700

Very few exceedences of screening levels were noted in samples collected below the waste materials from native clay material. In many cases these results were similar to background concentrations.

Results for the TCLP analysis performed on samples collected from the waste are presented on Table 4-12. All samples collected from areas and depth intervals where waste material was observed exhibited results for TCLP cadmium or TCLP lead that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure soil and waste materials at these locations would be classified as hazardous. Neither of the samples collected from native materials beneath the waste exhibited soil results that failed the TCLP screening criteria.

4.3 OFF-SITE SURFACE SOIL

Surface soil samples were collected from off-site locations to determine the presence and extent of contamination due to potential aerial distribution of contaminants from the TFM smokestack. Additionally, off-site surface soil samples were collected to identify off-site locations where historical placement of on-site waste materials occurred. On-site waste materials were historically removed for use as fill material, gravel in driveways and roads, and gardening material.

At a minimum, off-site surface soil samples were collected from 0 to 3 inches bgs. A shallower depth interval was selected for the off-site surface samples as compared to the on-site samples to avoid overly diluting disperse aerial deposition. That is, the probability of emissions from the TFM smokestack being present below 3 inches bgs was expected to be minimal given the smelter's limited years of operation. At locations where the residential screening level for lead was exceeded in the 0 to 3 inch interval, additional samples were collected from 3 inches to 12 inches bgs to characterize the vertical extent of metals. When possible, sample locations were not placed adjacent to buildings, roadways, or railroad sidings to minimize the likelihood of non-smelter materials (i.e., leaded paint, leaded gas, etc.) affecting results. Appendix D contains a list of off-site sampling locations and addresses.

In addition, a visual survey was conducted of the Collinsville area to identify areas of apparent historical placement. This survey was conducted using information provided by participants in local public meetings regarding former smelter operations in the Collinsville area. In addition, the field crew visually surveyed the Collinsville area and talked to residents during activities related to obtaining access agreements for off-site sampling.

A hand-held XRF was used during collection of surface soil samples from off-site locations to provide the approximate concentration of metals in off-site surface soil. Use of the instrument provided immediate feedback regarding the off-site sampling grid and any need for additional sample collection to define extent. The field-analyzed samples were used as a screening tool, and results of this screening is present in Appendix M. All samples selected for field XRF analysis were also submitted to the SEL for analysis of metals in a laboratory setting. The laboratory-analyzed samples were subsequently used for characterization of the off-site properties in the RI Report and the human health and ecological risk assessments.

Off-site surface soil results for arsenic, cadmium, lead, and zinc are presented on Table 4-13. Results for the TCLP analysis performed on samples from selected off-site locations are presented on Table 4-14. Tables 4-13 and 4-14 are organized by property location so that samples collected from the same property can be evaluated together. Soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24. Lead results for sample collected from the 0 to 3 inch bgs interval are provided on Figure 4-3. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure.

For purposes of discussion, the off-site soil sample results were organized as follows:

- Review for potential aerial deposition and historical placement using off-site grid and “distance” sampling locations
- Targeted sampling locations (Sample ID “TSL-“)
- Tribal Member properties (Sample ID “TRB-“)
- Properties with lead results in excess of USEPA Region VI residential soil screening level

4.3.1 Aerial Deposition and Historical Placement – Off-Site Surface Soil Review

Samples were collected from properties in the area immediately surrounding the TFM site and from properties at distances up to 1 ½ miles from the site. The sample collection strategy was previously discussed in Section 2.2. These off-site sampling locations were labeled with a sample prefix of “OSL-”.

Surface soil samples were collected and submitted to SEL for analysis of arsenic, cadmium, lead, and zinc. Approximately 10 percent of the samples were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

A summary of the “OSL-” sample results for the 0 to 3 inch depth interval is provided in the following table.

Metal Results and Exceedence Summary 0 to 3 inch bgs interval for “OSL-” Locations				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 395	10 U- 193	20 U – 15,900	50 U – 42,500
Number of sampling locations, including duplicates	111	111	111	111
Number of locations with detections	67	31	102	110
Locations with results > ecological screening level	20	31	101	101
Locations with results > industrial indoor worker screening level	67	0	11	0
Locations with results > industrial outdoor worker screening level	67	0	11	0
Locations with results > residential soil screening level	67	3	23	1
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	67	22	101	90

TCLP metals analyses were performed for approximately 10 percent of the off-site grid and “distance” surface soil samples collected. As indicated below, none of the TCLP metal results exceeded the screening criteria.

TCLP Results and Exceedence Summary 0 to 3 inch bgs interval for “OSL-” Locations			
Depth Interval (bgs)	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Number of sampling locations, including duplicates	14	14	14
Number of locations with TCLP metal detections	0	9	7
Locations with metals results > TCLP criteria	0	0	0

Lead results for samples collected from the 0 to 3 inch bgs interval are provided on Figure 4-3. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this

figure. Distances approximately ½ mile, 1 mile, and 1 ½ miles from the former smokestack location are also shown on Figure 4-3. The data do not suggest the presence of an aerial dispersion plume from the TFM that resulted in widespread contamination. However, it appears that historical placement has occurred in residential areas. Several properties immediately adjacent to the TFM exhibited metals results in excess of screening values, and the presence of smelter waste materials was typically visually observed at these locations (See Section 4.3.4 for further discussion of properties with lead results in excess of residential screening levels). However, it was also noted that properties greater than 1 mile from the TFM site exhibited the lowest concentrations of metals.

4.3.2 Targeted Sampling Locations

A survey of the Collinsville area was performed to identify high-interest sampling locations such as parks, schools, play grounds, day care centers, etc. (Appendix D in RI/FS Work Plan). This information was combined with high-interest locations identified in the *Collinsville Smelter Focused RI Report* (Exponent, 2001) to identify target sampling locations. These locations are labeled “TSL-” on Tables 4-13 and 4-14 and Figure 4-3. Locations targeted for sampling included:

- TSL-01 – Wilson Elementary School
- TSL-02 – Middle School
- TSL-03 – Pioneer Park
- TSL-04 – City Park
- TSL-05 – Faith Assembly Church (directly north of the TFM site)
- TSL-06 and TSL-07 – (b) (6), placed to verify results from *Collinsville Smelter Focused RI Report* (Exponent, 2001) for locations on the former Bartelsville Zinc Company property
- TSL-09 – (b) (6), placed at the request of property owner

Results for TSL-05, TSL-06, and TSL-07 are presented in Section 4.3.4, which presents discussion of properties with lead results in excess of residential screening levels. A summary of the TSL-01 through TSL-04 and TSL-09 results for the 0 to 3 inch depth interval is provided in the following table. While exceedence of background values were noted, concentrations were less than human health screening values for cadmium, lead, and zinc.

Metal Results and Exceedence Summary TSL-01 through TSL-04 and TSL-09				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 21	3 – 10 U	20 U – 303	142 – 1,160
Number of sampling locations, including duplicates	6	6	6	6
Number of locations with detections	3	2	5	6
Locations with results > ecological screening level	0	2	5	6
Locations with results > industrial indoor worker screening level	3	0	0	0
Locations with results > industrial outdoor worker screening level	3	0	0	0
Locations with results > residential soil screening level	3	0	0	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	3	2	5	6

In addition, the surface soil sample and duplicate from location TSL-04 were prepared using TCLP and analyzed for arsenic, cadmium, and lead. No exceedences of the toxicity characteristic maximum concentrations listed in 40 CFR 261.24 were noted.

4.3.3 Tribal Member Properties

Based on information provided by the ITEC, surface soil samples were collected from tribal residence locations that were located in the vicinity of the TFM. Surface soil sample were collected from six tribal residence locations, and samples were analyzed for arsenic, cadmium, lead, and zinc. These locations are labeled “TRB-“ on Tables 4-13 and 4-14 and Figure 4-3. Tribal member properties sampled included: TRB-01, TRB-04, and TRB-08 through TRB-11.

Results for TRB-08 through TRB-10 are presented in Section 4.3.4, which presents discussion of properties with lead results in excess of residential screening levels. A summary of the TRB-01, TRB-04, and TRB-11 results for the 0 to 3 inch depth interval is provided in the following table. Arsenic and cadmium were not detected in samples collected from locations TRB-01, TRB-04, or TRB-11. Lead was detected in the samples collected from TRB-01 and TRB-04, and these concentrations exceeded the background concentration and the USEPA Region VI ecological screening value. Zinc was detected at all three locations, and zinc concentrations for samples collected from TRB-01 and TRB-04 exceeded the background concentration and the USEPA Region VI ecological screening value. Lead and zinc concentrations were less than human health screening values.

Metal Results and Exceedence Summary TRB-01, TRB-04, and TRB-11				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U	10 U	20 UJ- – 237	71 – 879
Number of sampling locations, including duplicates	3	3	3	3
Number of locations with detections	0	0	2	3
Locations with results > ecological screening level	0	0	2	2
Locations with results > industrial indoor worker screening level	0	0	0	0
Locations with results > industrial outdoor worker screening level	0	0	0	0
Locations with results > residential soil screening level	0	0	0	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	0	0	2	2

4.3.4 Off-Site Samples Exhibiting Lead Greater Than Residential Screening Values

During off-site soil surface soil sampling in RI Phase I, samples collected from 11 off-site locations exhibited lead results in excess of residential screening levels. Additional samples were collected from these properties during RI Phase II to better determine the horizontal and vertical extent of contamination. Samples were collected from 0 to 3 inches bgs and 3 to 12 inches bgs and analyzed for arsenic, cadmium, lead, and zinc. At least one sample collected from the following properties exhibited a lead result in excess of residential screening levels:

- Right-of-Way/Ditches adjacent to TFM and associated with Old US Hwy 169 and the Atchinson Topeka Santa Fe Railroad.
- (b) (6) and associated retort embankment observed at (b) (6)
- (b) (6)
- Faith Assembly Church, directly north of the TFM site
- (b) (6) directly west of the TFM site
- (b) (6) directly west of the TFM site
- (b) (6)
- (b) (6)
- (b) (6)

- [REDACTED] (b) (6) [REDACTED]
- Tulsa County Plat (b) (6) [REDACTED]

Each of these properties is discussed individually in following sections.

4.3.4.1 Right-of-Way / Ditches Old US Hwy 169 and Atchinson Topeka Santa Fe Railroad Adjacent to TFM

Samples were collected from locations OSL-100 and OSL-101 immediately east of the TFM along the corridor between the TFM site and Atchinson Topeka Santa Fe Railroad. Samples were also collected from locations OSL-102 and OSL-103 which were placed on the opposite side of the railroad tracks adjacent to Old US Hwy 169. Lastly, samples were collected from OSL-16, which was placed north of the TFM in the right-of-way between S 12th Street and the railroad tracks. The sampling locations are shown on Figure 4-3. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of a sample and duplicate collected from location OSL-103 are presented on Table 4-14. Lead results from the 0 to 3 inch bgs depth interval are also posted on Figure 4-3. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure.

The following table provides a summary of sample results.

Metal Results and Exceedence Summary				
Right-of-Way/Ditches Old US Hwy 169 and Railroad (i.e., OSL-100 through OSL-103, and OSL-116)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 395	10 U - 193	58.3 – 15,900	327 – 42,500
Number of sampling locations, including duplicates	10	10	10	10
Number of locations with detections	8	9	10	10
Locations with results > ecological screening level	6	9	10	10
Locations with results > industrial indoor worker screening level	8	0	5	0
Locations with results > industrial outdoor worker screening level	8	0	5	0
Locations with results > residential soil screening level	8	4	6	1
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	8	9	10	10

Samples collected from locations OSL-100 and OSL-101, which were immediately adjacent to the TFM site, contained the highest concentrations of metals. Exceedences of screening levels were noted in both the 0 to 3 ft bgs and 3 to 12 ft bgs intervals at these locations. As previously noted in Section 4.2.2,

smelter materials were observed east of the on-site waste area between the TFM property boundary and the railroad right-of-way in this corridor. It appeared that waste materials have either collapsed from piles located on-site into this corridor or were intentionally placed in the area for bank stabilization. The railroad, which was constructed in 1899 prior to operation of smelters in Collinsville, appears to have acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks. Samples collected from locations OSL-102 and OSL-103 on the opposite side of the railroad tracks support this assumption since these samples exhibited metals results much lower than samples collected adjacent to the TFM.

During off-site sampling collection, materials that appeared to be smelter waste were observed immediately north of the TFM site between S 12th Street and the railroad tracks (See photograph in Appendix G). Sample OSL-116/SS01 was collected from these materials, and this sample exhibited elevated metals results. Sampling was not pursued further along this corridor due to inability to obtain appropriate access agreements.

4.3.4.2 (b) (6)

Samples were collected from a property at (b) (6), and these locations were labeled with the prefix “OSL-96.” This property was in the vicinity of a retort embankment noted at (b) (6) (See Appendix G). Sample OSL-96/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 409 mg/kg, which exceeded the 400 mg/kg residential soil screening level. During RI Phase II, location OSL-96 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected west, east, and south of location OSL-96 during RI Phase II. A sample was not collected north of OSL-96 due to a lack of an access agreement. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of Samples OSL-96D/SS01 are presented on Table 4-14.

The sampling locations on and around (b) (6) are shown on Figure 4-3a. Lead results for both depth intervals are also posted on Figure 4-3a. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at OSL-96 and both depth intervals at location OSL-96D, which was placed south of the original sample location. The following table provides a summary of samples collected on and around (b) (6) for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary (b) (6) (i.e., OSL-96 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 119	10 U	37.5 – 1,430	194 – 6,590
Number of sampling locations, including duplicates	9	9	9	9
Number of locations with detections	6	0	9	9
Locations with results > ecological screening level	2	0	9	9
Locations with results > industrial indoor worker screening level	6	0	1	0
Locations with results > industrial outdoor worker screening level	6	0	1	0
Locations with results > residential soil screening level	6	0	3	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	6	0	9	9

With the exception of the previously discussed lead samples, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and two arsenic results exceeded ecological screening levels. Additional sampling was not conducted surrounding OSL-96D, which exhibited the highest metals concentration, due to lack of available access at surrounding properties. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-96D/SS01.

4.3.4.3

Samples were collected on and around the property at (b) (6), and two locations at an adjacent property at (b) (6) were also sampled. These locations were labeled with the prefix “OSL-97.” Sample OSL-97B/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 383 mg/kg, which was nearing the 400 mg/kg residential soil screening level. During RI Phase II, location OSL-97B was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected from locations in an approximate 50-foot radius surrounding OSL-97B during RI Phase II, and location OSL-97A/OSL-97D was placed on the adjacent property. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of Sample OSL-97C/SS02 are presented on Table 4-14.

The sampling locations placed on the (b) (6) properties are shown on Figure 4-3a. Lead results for both depth intervals are also posted on Figure 4-3e. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead

exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at OSL-97E, which was placed east of location OSL-97B. Lead also exceeded residential screening levels for the duplicate sample (OSL-1012/SS02) but not the primary sample (OSL-97F/SS02) collected from the 3 to 12 inch depth interval at location OSL-97F. A sample was not collected in the 0 to 3 inch bgs interval at location OSL-97F due to the presence of gravel. The following table provides a summary of samples collected on the Shepherd properties for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary				
Properties (i.e., OSL-97 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U – 65.1	10 U – 16.4	35 – 755	149 – 5,400
Number of sampling locations, including duplicates	10	10	10	10
Number of locations with detections	8	1	10	10
Locations with results > ecological screening level	2	1	10	10
Locations with results > industrial indoor worker screening level	8	0	0	0
Locations with results > industrial outdoor worker screening level	8	0	0	0
Locations with results > residential soil screening level	8	0	2	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	8	1	10	10

With the exception of the lead results for Samples OSL-97E/SS01 and OSL-1012/SS02, the cadmium, lead, and zinc results only exceeded background concentrations and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and two arsenic results exceeded ecological screening levels. In general, samples collected from the 3 to 12 inch bgs interval exhibited lower concentrations of metals than the samples collected from the 0 to 3 inch bgs interval. Additional sampling was not conducted surrounding locations OSL-97E and OSL-97F, which exhibited the highest metals concentration, due to lack of available access at surrounding properties. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-97C/SS02.

4.3.4.4 Faith Assembly Church

Samples were collected from Faith Assembly Church property, which is adjacent to the northern boundary of the TFM, and these locations were labeled with the prefix “TSL-05.” In addition, samples were also collected from location OSL-34 and OSL-35 on the Faith Assembly Church property. Sample TSL-05/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this

sample were 424 mg/kg, which slightly exceeded the residential soil screening level. During RI Phase II, location TSL-05 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected in the area around location TSL-05 during RI Phase II. Arsenic, cadmium, lead, and zinc results for these samples are presented on Table 4-13. In addition, results for the TCLP analysis of Sample TSL-05A/SS02 are presented on Table 4-14.

The sampling locations placed on the Faith Assembly Church property are shown on Figure 4-3b. Lead results for both depth intervals are also posted on Figure 4-3b. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at TSL-05. Lead also exceeded residential screening levels a sample collected from the 0 to 3 inch bgs interval at location TSL-05D, which was placed on the property boundary between the TFM site and Faith Assembly Church. The following table provides a summary of samples collected on the Faith Assembly Church property for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary Faith Assembly Church Property (i.e., TSL-05 locations, OSL-34, and OSL-35)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U – 56.8	10 U – 23.7	20 U – 691	183 – 2,210
Number of sampling locations, including duplicates	13	13	13	13
Number of locations with detections	9	4	12	13
Locations with results > ecological screening level	2	4	11	13
Locations with results > industrial indoor worker screening level	9	0	0	0
Locations with results > industrial outdoor worker screening level	9	0	0	0
Locations with results > residential soil screening level	9	0	2	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	9	4	11	13

With the exception the previously discussed lead results, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. The highest level of metals was noted at location TSL-05D, which was immediately adjacent to the TFM site. In addition, metals concentrations were lower in samples collected from the 3 to 12 inch bgs interval than samples collected from the 0 to 3 inch interval. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TSL-05A/SS02.

4.3.4.5 (b) (6)

Samples were collected from the property located at (b) (6), which is adjacent to the northwest boundary of the TFM, and these locations were labeled with the prefixes “OSL-36” through “OSL-39”. Samples OSL-36/SS01 and OSL-39/SS01 were collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for these samples were 734 and 1120 J- mg/kg, respectively, which exceeded the residential soil screening level. During RI Phase II, locations OSL-36 and OSL-39 were revisited and samples were collected from the 3 to 12 inch bgs interval. Additional samples were also collected in the area around locations OSL-36 and OSL-39 during RI Phase II. Arsenic, cadmium, lead, and zinc results for these samples are presented on Table 4-13. In addition, results for the TCLP analysis of Samples OSL-36C/SS01, OSL-39/SS01, and OSL-39E/SS01 are presented on Table 4-14.

The sampling locations placed on (b) (6) are shown on Figure 4-3b. Lead results for both depth intervals are also posted on Figure 4-3b. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-36, ODL-36E, OSL-39, OSL-39D, and OSL-39E. Lead also exceeded residential screening levels a sample collected from the 3 to 12 inch bgs interval at location OSL-39B. The following table provides a summary of samples collected on (b) (6) for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary				
(b) (6) Property (i.e., OSL-36 through OSL-39 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U – 57	10 U – 28.3	20 U – 927	36.3 – 3,580
Number of sampling locations, including duplicates	26	26	26	26
Number of locations with detections	16	10	24	26
Locations with results > ecological screening level	7	10	24	23
Locations with results > industrial indoor worker screening level	16	0	4	0
Locations with results > industrial outdoor worker screening level	16	0	4	0
Locations with results > residential soil screening level	16	0	7	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	16	10	24	23

Due to the possibility of construction using smelter waste materials, a sample was collected from the driveway on the property and labeled OSL-36DW/SS01-GRAB. Zinc was the only metal detected in this sample, and it was concluded that this driveway was not constructed using smelter waste.

The highest levels of metals were noted at locations OSL-39, OSL-39B, OSL-39D, and OSL-39E, which were adjacent to the TFM site. In this area, the extent of contamination was defined by location OSL-38 to the west. Since the TFM site was directly south and east of these locations, additional samples were not collected in these directions and it was assumed that metals concentrations would not decrease with closer proximity to the TFM site. With the exception of Sample OSL-39B/SS02 from the 3 to 12 inch bgs interval, metals concentrations were lower in the 3 to 12 inch bgs interval. Since the field XRF exhibited metals concentrations less than residential screening levels in the sample collected from the 3 to 12 inch interval at location OSL-39B, vertical delineation of metals at this location was not pursued during RI Phase II field activities.

No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-36C/SS01, OSL-39/SS01, and OSL-39E/SS01.

4.3.4.6

Samples were collected from the property located at (b) (6) which is adjacent to the southwest boundary of the TFM, and these locations were labeled with the prefixes “OSL-48” through “OSL-50”. Samples OSL-49/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample was 571 mg/kg, which exceeded the residential soil screening level. During RI Phase II, location OSL-49 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected in the area around locations OSL-49 during RI Phase II. Arsenic, cadmium, lead, and zinc results for these samples are presented on Table 4-13. In addition, results for the TCLP analysis of Samples OSL-49D/SS01 and OSL-50/SS01 are presented on Table 4-14.

The sampling locations placed on (b) (6) are shown on Figure 4-3b. Lead results for both depth intervals are also posted on Figure 4-3b. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-49, OSL-49C, and OSL-49D. The following table provides a summary of samples collected on the property for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary (b) (6) (i.e., OSL-48 through OSL-50 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U – 144	10 U – 127	20 U – 2,220	118 – 8,090
Number of sampling locations, including duplicates	16	16	16	16
Number of locations with detections	6	3	13	16
Locations with results > ecological screening level	3	3	13	12

Metal Results and Exceedence Summary (b) (6) (b) (6) (i.e., OSL-48 through OSL-50 locations)				
	Arsenic	Cadmium	Lead	Zinc
Locations with results > industrial indoor worker screening level	6	0	1	0
Locations with results > industrial outdoor worker screening level	6	0	1	0
Locations with results > residential soil screening level	6	0	3	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	6	3	13	16

Smelter waste materials were noted at locations OSL-49/OSL-49A, OSL-49C, and OSL-49E. Samples collected from location OSL-49C, which was immediately adjacent to the TFM, exhibited the highest concentrations of metals. In this area, the extent of contamination was defined by location OSL-49B to the north, OSL-49DD to the south, and OSL-49EE to the west. Since the TFM site was directly east of the OSL-49 area, additional samples were not collected east of OSL-49C and it was assumed that metals concentrations would not decrease with closer proximity to the TFM site. Metals concentrations decreased in the 3 to 12 inch bgs interval, and elevated metals were limited to the 0 to 3 inch bgs interval.

Samples collected from locations OSL-48 and OSL-50 exhibited the lowest concentration of metals in the 0 to 3 inch bgs interval. These locations provide both the horizontal and vertical extent of metals in the southern part of the (b) (6) (b) (6) property.

No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-49D/SS01 and OSL-50/SS01.

4.3.4.7 (b) (6) (b) (6)

Samples were collected from the property at (b) (6) (b) (6), which is north of the TFM site at the corner of (b) (6) (b) (6). These locations were labeled with the prefix "TRB-09." Since the driveway of this property appeared to be composed of smelter waste materials, a sample was also collected from the driveway at this location during RI Phase I. Sample TRB-09/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 406 mg/kg, which just exceeded residential soil screening level. During RI Phase II, location TRB-09 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected from locations near TRB-09 during RI Phase II. Arsenic, cadmium, lead, and zinc results are presented on

Table 4-13. In addition, results for the TCLP analysis of Sample TRB-09B/SS01 is presented on Table 4-14.

The sampling locations placed at [REDACTED] (b) (6) [REDACTED] are shown on Figure 4-3c. Lead results for both depth intervals are also posted on Figure 4-3c. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. With the exception of the sample collected from the 0 to 3 inch interval at location TRB-09E, lead exceeded the residential screening level in samples collected from the property. With the exception of the driveway sample, these exceedences ranged from 400 to 472 mg/kg. The following table provides a summary of samples collected on [REDACTED] (b) (6) [REDACTED] for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary [REDACTED] (b) (6) [REDACTED] (i.e., TRB-09 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	21 - 538	10 U - 41	237 – 8,950	1,050 – 25,300
Number of sampling locations, including duplicates	8	8	8	8
Number of locations with detections	8	2	8	8
Locations with results > ecological screening level	5	2	8	8
Locations with results > industrial indoor worker screening level	8	0	1	0
Locations with results > industrial outdoor worker screening level	8	0	1	0
Locations with results > residential soil screening level	8	1	6	1
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	8	2	8	8

Due to the possibility of construction using smelter waste materials, a sample was collected from the driveway at [REDACTED] (b) (6) [REDACTED] and labeled TRB-09DW/SS01-GRAB. Concentrations of metals in the sample were similar to metal concentrations observed in samples collected from the waste area on the TFM site, and it was concluded that this driveway was constructed using smelter waste. Collection of additional samples for determination of the horizontal and vertical extent of metals near the driveway was planned during RI Phase II. During RI Phase II activities, it appeared that the driveway had been altered (see photograph comparison in Appendix G), and the resident opposed additional sampling of the driveway. Therefore, sampling during RI Phase II was limited to the immediate vicinity of location TRB-09.

The remaining sampling locations at [REDACTED] (b) (6) [REDACTED] Street were located in the southeast corner of the property. Concentrations of arsenic, cadmium, lead, and zinc were consistent across these sampling

locations and both depth intervals, and exceedences of residential screening levels were noted for arsenic and lead. Since samples were collected in the southeast corner of the property, it was assumed that exceedences were present to the property line. Sample collection was not pursued for locations east of [REDACTED] [REDACTED] [REDACTED] [REDACTED]. The western extent of elevated metals was defined at location TRB-08E on the adjacent property, which is discussed in Section 4.3.4.8.

No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TRB-09B/SS01.

4.3.4.8 [REDACTED] (b) (6) [REDACTED]

Samples were collected from the property at [REDACTED] (b) (6) [REDACTED], directly west of the [REDACTED] (b) (6) [REDACTED] property. These locations were labeled with the prefix “TRB-08.” Sample TRB-08/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 546 mg/kg, which just exceeded residential soil screening level. During RI Phase II, location TRB-08 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected from locations near TRB-08 during RI Phase II. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of Sample TRB-08B/SS01 is presented on Table 4-14.

The sampling locations placed at [REDACTED] (b) (6) [REDACTED] are shown on Figure 4-3c. Lead results for both depth intervals are also posted on Figure 4-3c. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Samples collected from both depth intervals at location TRB-08 and TRB-08C exhibited lead results that exceeded the residential screening level. The following table provides a summary of samples collected on the property for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary [REDACTED] (b) (6) [REDACTED] (i.e., TRB-08 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	11 - 269	10 U – 18.4	118 – 2,850	440 – 5,160
Number of sampling locations, including duplicates	9	9	9	9
Number of locations with detections	9	4	9	9
Locations with results > ecological screening level	4	4	9	9
Locations with results > industrial indoor worker screening level	9	0	1	0
Locations with results > industrial outdoor worker screening level	9	0	1	0
Locations with results > residential soil screening level	9	0	4	0

Metal Results and Exceedence Summary (b) (6) (i.e., TRB-08 locations)				
	Arsenic	Cadmium	Lead	Zinc
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	9	4	9	9

Sampling locations were along the southern boundary of the (b) (6) property. Samples collected from both depth intervals at locations TRB-08/TRB-08A and TRB-08C exhibited the highest concentrations of metals. Materials that appeared to be smelter waste were observed in the vicinity of location TRB-08/TRB-08A. Other than locations placed on the Faith Assembly Church property, sample collection was not pursued south of 136th Street. The northern extent of elevated metals was defined at location TRB-08B, and the western extent of elevated metals was defined at location TRB-08E. Elevated metals were also noted directly east of the property on the (b) (6) property.

No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TRB-08B/SS01 or its duplicate sample.

4.3.4.9 (b) (6)

Samples were collected from the property at (b) (6), and these locations were labeled with the prefix "TRB-10." In addition, samples were also collected from location OSL-68 and OSL-69 on this property. Sample TRB-10/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 837 mg/kg, which exceeded the 400 mg/kg residential soil screening level. During RI Phase II, location TRB-10 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected from locations in an approximate 50-foot radius surrounding TRB-10 during RI Phase II. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of Samples TRB-10/SS01, TRB-10A/SS01, and OSL-69/SS01 are presented on Table 4-14.

The sampling locations placed on (b) (6) are shown on Figure 4-3d. Lead results for both depth intervals are also posted on Figure 4-3d. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at TRB-10, and this exceedence was also noted in the duplicate sample. Lead also exceeded residential screening levels for the primary sample (TRB-10E/SS02) but not the duplicate sample (TRB-1003/SS02) collected from the 3 to 12 inch depth interval at location TRB-10E. Lastly, lead exceeded residential screening levels for the sample

collected from the 3 to 12 inch interval at location TRB-10D. The following table provides a summary of samples collected on [REDACTED] (b) (6) [REDACTED] for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary 12839 N 113th E Ave (i.e., TRB-10 locations, OSL-68, and OSL-69)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 53	10 U - 20	34.3 – 979	182 – 2,630
Number of sampling locations, including duplicates	14	14	14	14
Number of locations with detections	11	5	11	11
Locations with results > ecological screening level	5	5	11	11
Locations with results > industrial indoor worker screening level	11	0	2	0
Locations with results > industrial outdoor worker screening level	11	0	2	0
Locations with results > residential soil screening level	11	0	4	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	11	5	11	11

With the exception of the previously discussed lead results, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. Exceedences were generally noted in the sample collected on the western side of the property closest to Old US Hwy 169 and the TFM site. Samples collected north and east of location TRB-10 did not exhibit exceedences of the residential lead screening level. Since field XRF results (See Appendix M) for the Phase II samples did not exceed residential screening levels, additional samples were not collected during RI Phase II to delineate the extent of metals on the western side of the property. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples TRB-10/SS01, TRB-10A/SS01, and OSL-69/SS01.

4.3.4.10 [REDACTED] (b) (6) [REDACTED]

Samples were collected from the property at [REDACTED] (b) (6) [REDACTED] and these locations were labeled with the prefix “OSL-12.” Sample OSL-12/SS01 was collected from the 0 to 3 inch bgs interval during RI Phase I, and lead results for this sample were 616 mg/kg, which exceeded the 400 mg/kg residential soil screening level. During RI Phase II, location OSL-12 was revisited and a sample was collected from the 3 to 12 inch bgs interval. Additional samples were also collected from locations in an approximate 50-foot radius surrounding OSL-12 during RI Phase II. Arsenic, cadmium, lead, and zinc results are presented on Table 4-13. In addition, results for the TCLP analysis of Samples OSL-12/SS01 and OSL-

12E/SS02 are presented on Table 4-14.

The sampling locations placed on [REDACTED] (b) (6) [REDACTED] are shown on Figure 4-3e. Lead results for both depth intervals are also posted on Figure 4-3e. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. As can be seen on the figure, the only lead exceedence was at location OSL-12 in the 0 to 3 inch bgs interval. Samples collected immediately surrounding OSL-12 provided delineation of the horizontal extent of contamination. In addition, the sample collected from the 3 to 12 inch interval (Sample ID OSL-12A/SS02) at location OSL-12 also contained lead below residential screening levels and provided the vertical extent of contamination.

The following table provides a summary of samples collected on [REDACTED] (b) (6) [REDACTED] for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary [REDACTED] (b) (6) [REDACTED] (i.e., OSL-12 locations)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U - 47	10 U - 4	20 U - 616	92.4 - 1,110
Number of sampling locations, including duplicates	11	11	11	11
Number of locations with detections	6	2	10	11
Locations with results > ecological screening level	1	2	10	10
Locations with results > industrial indoor worker screening level	5	0	0	0
Locations with results > industrial outdoor worker screening level	5	0	0	0
Locations with results > residential soil screening level	5	0	1	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	5	2	10	10

With the exception of the lead result for Sample OSL-12/SS01, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. In general, samples collected from the 3 to 12 inch bgs interval exhibited lower concentrations of metals than the samples collected from the 0 to 3 inch bgs interval. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-12/SS01 or OSL-12E/SS02.

4.3.4.11 (b) (6)

Samples were collected from property located at (b) (6), which is directly east of the TFM across the Atchinson Topeka Santa Fe Railroad and Old US Hwy 169. A portion of this property includes part the former Bartlesville Zinc Company smelter site, also known as the Collinsville Smelter Site. Extensive sampling has been previously conducted in this area as part of voluntary cleanup actions for the Collinsville Smelter Site (Exponent, 2001). Arsenic, cadmium, lead, and zinc results for samples collected on (b) (6) are presented on Table 4-13, and results for the TCLP analysis of Sample OSL-40D/SS01 is presented on Table 4-14.

The sampling locations placed on (b) (6) are shown on Figure 4-3f. Lead results for both depth intervals are also posted on Figure 4-3f. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-40, OSL-40C, OSL-40CCC, OSL-40D, and OSL-40DD. The following table provides a summary of samples collected on Tulsa County Plat 34010 in Sec 32 T22N R14E for both the 0 to 3 inch and 3 to 12 inch bgs intervals.

Metal Results and Exceedence Summary (b) (6) (i.e., OSL-40 locations, OSL-41, OSL-46, OSL-47, OSL-57, OSL-58, TSL-06 and TSL-07)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U – 136	10 U – 36.4	29.6 – 1,980	193 – 6,550
Number of sampling locations, including duplicates	22	22	22	22
Number of locations with detections	17	6	22	22
Locations with results > ecological screening level	7	6	22	22
Locations with results > industrial indoor worker screening level	17	0	3	0
Locations with results > industrial outdoor worker screening level	17	0	3	0
Locations with results > residential soil screening level	17	0	5	0
Locations with results > Background 95 UCL for 0 to 0.5 ft bgs	17	6	22	22

Smelter waste materials were noted at locations OSL-40C, OSL-40CC, OSL-40CCC, and OSL-40D. Samples collected from this area exhibited the highest concentration of metals. Samples collected from locations south of the OSL-40 cluster exhibited lower metals results and few exceedences of screening levels. Since the area around location OSL-40 has been previously characterized as part of the Collinsville Smelter Site Focused RI (Exponent, 2001), additional sampling was not conducted in this

area. However, it was noted that the contamination appeared limited to the 0 to 3 inch bgs interval in the area. It is likely that the railroad, which was constructed in 1899 prior to operation of the TFM and Collinsville smelters, acted as a natural barrier to retain TFM or Collinsville Smelter waste materials to their respective side of the railroad tracks.

Sample locations TSL-06 and TSL-07 were placed to confirm data collected for Collinsville Smelter Site Focused RI. Location TSL-06 corresponded to location RN08SO, and location TSL-07 corresponded to RN07SO. Sample results from both investigations were consistent.

No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-40D/SS01, which exhibited the highest total lead concentration.

4.4 SURFACE WATER AND SEDIMENT NATURE AND EXTENT OF CONTAMINATION

Surface water and sediment samples were collected to assess the potential of waste migration to the surrounding streams, ponds, and strip mine pit. Surface water and sediment samples were collected at locations where surficial transport of contaminants might have occurred. Locations for surface water and sediment sampling were co-located. To avoid excessive turbidity in the samples, surface water was collected prior to collection of sediment. Surface water and sediment samples were analyzed for arsenic, cadmium, lead, and zinc. In addition, surface water samples were analyzed for the general chemistry parameters of TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate. The temperature, pH, and specific conductivity of the surface water samples were also measured in the field.

Surface water results were compared to the following screening levels: USEPA Region VI screening levels for chronic exposure of ecological freshwater receptors, Oklahoma Water Quality Criteria screening levels for fish and wildlife propagation for acute and chronic exposures, and Oklahoma Water Quality Criteria screening levels for human health protection based on combined water and fish consumption and only fish consumption. In addition, sediment sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24.

4.4.1 Background Surface Water and Sediment Samples

Background surface water and sediment samples were collected from two locations, BG-OFF-01 and BG-OFF-02 during RI Phase I activities. During RI Phase II activities, surface water and sediment samples were collected from three locations in a Farm Pond located on the [REDACTED] (b) (6) [REDACTED] property upgradient from the TFM. These sampling locations are labeled as sampling points FP-01 to FP-03. The background sampling locations are presented on Figures 2-3 and 4-1.

4.4.1.1 Background Surface Water Samples

Background surface water sample results are provided in Table 4-15, and surface water sample results for the Farm Pond located upgradient of the TFM site are provided on Table 4-16. Surface water results for lead and zinc are presented on Figure 4-4. Arsenic, cadmium, lead and zinc were not detected in the background or Farm Pond surface water samples. Results for the field-measured parameters are presented in Appendix E.

4.4.1.2 Background Sediment Samples

Background sediment sample results are provided on Table 4-17, and sediment results for the Farm Pond located on the [REDACTED] (b) (6) [REDACTED] property are provided on Table 4-18. The results for lead in sediment are presented on Figure 4-5. Arsenic, cadmium, and lead were not detected in the background sediment samples. Zinc was detected in both samples and the field duplicate, and the zinc concentration for Sample BG-OFF-02/SD01 exceeded the USEPA Region VI ecological screening level.

Arsenic and cadmium were detected in sediment samples collected from one location each at the Farm Pond. In addition, lead and zinc were detected in sediment samples collected from all three locations in the Farm Pond. These detections exceeded the USEPA Region VI ecological screening level. In addition, the arsenic detections exceeded the USEPA Region VI screening levels for industrial outdoor workers and residential soil. TCLP metals analysis was performed for one Farm Pond sample and its field duplicate. No exceedences of the toxicity characteristic maximum concentrations were noted.

4.4.2 TFM Pond 1 Surface Water and Sediment

4.4.2.1 TFM Pond 1 Surface Water Samples

Surface water was collected from three locations within TFM Pond 1 in July 2005. One location (PD1-02) was resampled in September 2005 to obtain sufficient volume to perform laboratory quality control analyses. Due to elevated concentrations of metals noted in the September 2005 sample, location PD1-02

was also sampled in May 2006 to confirm results. The results for surface water samples collected from TFM Pond 1 are presented on Table 4-19. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Metals were not detected in the surface water samples that were collected from three locations in Pond 1 in July 2005. Samples collected from location PD1-02 exhibited detections of cadmium, lead, and zinc for samples collected in September 2005 and May 2006. The cadmium, lead, and zinc detections noted in the samples collected from location PD1-02 in September 2005 and May 2006 exceeded multiple screening levels. The following results and exceedence of screening levels were noted for TFM Pond 1:

Metal Results and Exceedence Summary for TFM Pond 1				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	5 U - 37	10 U - 56	33 U* - 1,680
Number of samples (not including lab replicates or field duplicates)	5	5	5	5
Number of locations with detections	0	1	1	1
Result > ecological screening level	0	2	2	2
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	2
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	2	2	2
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	2	2	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	1	Not Applicable
Result > Background or Adjacent Farm Pond	0	2	2	2
When duplicate samples are present, an exceedence is counted if either one of the values exceeds the applicable screening level. If both the sample and duplicate exceed the screening level, only one is counted.				

4.4.2.2 TFM Pond 1 Sediment

Sediment samples were collected from three locations in TFM Pond 1. Samples were analyzed for arsenic, cadmium, lead, and zinc. In addition, samples collected from location PD1-02 were prepared using TCLP and then analyzed. On-Site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary of the TFM Pond 1 sediment data:

TFM Pond 1 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	26 - 195	151 – 1,400	445 – 2,740	6,220 – 44,700

TFM Pond 1 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Number of sampling locations	3	3	3	3
Number of locations with detections	3	3	3	3
Locations with results > ecological screening level	3	3	3	3
Locations with results > industrial outdoor worker screening level	3	1	2	0
Locations with results > residential soil screening level	3	3	3	1
Locations with results > background or adjacent Farm Pond	3	3	3	3

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels.

In addition, the metal concentrations for sediment samples collected from TFM Pond 1 were greater than both background sampling locations and the adjacent Farm Pond. TCLP metals analysis was also performed for one sample, and SEL analyzed this sample in triplicate. No exceedences of the toxicity characteristic maximum concentrations were noted.

Pond 1 is approximately 1.22 acres. Samples with metal results in excess of industrial outdoor worker and residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval across Pond 1. Assuming that the depth of contamination in the pond is similar to the surrounding soils, the depth of contaminated sediment in TFM Pond 1 is approximately 2 ft deep. Approximately 3,900 cubic yards (yd³) of contaminated sediment is estimated to be present in TFM Pond 1.

4.4.3 TFM Pond 2 Surface Water and Sediment

4.4.3.1 TFM Pond 2 Surface Water Samples

Surface water was collected from two locations within TFM Pond 2 in July 2005. The results for surface water samples collected from TFM Pond 2 are presented on Table 4-21. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Samples collected from both locations exhibited detections of cadmium, lead, and zinc, and these detections exceeded multiple screening levels. In addition, arsenic was detected in Sample PD2-02/SW01, but this detection did not exceed any screening levels. Metals results for both locations exceeded the surface water results for both background locations and the adjacent Farm Pond. The following results and exceedence of screening levels were noted for TFM Pond 2:

Metal Results and Exceedence Summary for TFM Pond 2				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U - 17	12 - 22	17 - 75	299 - 781
Number of samples	2	2	2	2
Number of locations with detections	1	2	2	2
Result > ecological screening level	0	2	2	2
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	2
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	2	2	2
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	1	2	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	1	Not Applicable
Result > Background or Adjacent Farm Pond	1	2	2	2

4.4.3.2 TFM Pond 2 Sediment

Sediment samples were collected from two locations in TFM Pond 2. Samples were analyzed for arsenic, cadmium, lead, and zinc. On-site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary of the TFM Pond 2 sediment data:

TFM Pond 2 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	52 – 84	44 – 330	942 – 1,200	4,840 – 9,590
Number of sampling locations	2	2	2	2
Number of locations with detections	2	2	2	2
Locations with results > ecological screening level	2	2	2	2
Locations with results > industrial outdoor worker screening level	2	0	2	0
Locations with results > residential soil screening level	2	2	2	0
Locations with results > background or adjacent Farm Pond	2	2	2	2

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels.

In addition, the metal concentrations for sediment samples collected from TFM Pond 2 were greater than both background sampling locations and the adjacent Farm Pond.

Pond 2 is approximately 0.85 acres. Samples with metal results in excess of industrial outdoor worker and residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval in both samples

collected from Pond 2. Assuming that the depth of contamination in the pond is similar to the surrounding soils, the depth of contaminated sediment in TFM Pond 2 is approximately 2 ft deep. Approximately 2,700 yd³ of contaminated sediment is estimated to be present in TFM Pond 2.

4.4.4 TFM Pond 3 Surface Water and Sediment

4.4.4.1 TFM Pond 3 Surface Water Samples

Surface water was collected from two locations within TFM Pond 3 in July 2005. Additionally a field duplicate sample was collected. The results for surface water samples collected from TFM Pond 3 are presented on Table 4-22. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic was not detected. Cadmium, lead, and zinc were detected only in the duplicate sample, and not the primary sample. These detections are potentially related to disturbance of pond sediment and increased turbidity of the duplicate sample as compared to the primary sample. Exceedences of the following screening levels were noted for surface water from TFM Pond 3:

Metal Results and Exceedence Summary for TFM Pond 3				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	5 U – 8	10 U - 30	28 U* - 375
Number of samples, includes field duplicate	3	3	3	3
Number of locations with detections	0	1	1	1
Result > ecological screening level	0	1	1	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	1	1	1
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	0	1	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	1	Not Applicable
Result > Background or Adjacent Farm Pond	0	1	1	1

4.4.4.2 TFM Pond 3 Sediment

Sediment samples were collected from two locations in TFM Pond 3. Two samples and a field duplicate were analyzed. Samples were analyzed for arsenic, cadmium, lead, and zinc. On-Site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this

figure. The following table provides a summary of the TFM Pond 3 sediment data:

TFM Pond 3 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	20 – 68	43 – 220	375 – 1,060	2,770 – 9,700
Number of sampling locations, includes duplicate	3	3	3	3
Number of locations with detections	3	3	3	3
Locations with results > ecological screening level	3	3	3	3
Locations with results > industrial outdoor worker screening level	3	0	1	0
Locations with results > residential soil screening level	3	3	1	0
Locations with results > background or adjacent Farm Pond	3	3	3	3

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels.

In addition, the metal concentrations for sediment samples collected from TFM Pond 3 were greater than both background sampling locations and the adjacent Farm Pond.

Pond 3 is approximately 0.70 acres. Samples with metal results in excess of industrial outdoor worker and/or residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval in both samples collected from Pond 3. Assuming that the depth of contamination in the pond is similar to the surrounding soils, the depth of contaminated sediment in TFM Pond 3 is approximately 2 ft deep. Approximately 2,300 yd³ of contaminated sediment is estimated to be present in TFM Pond 3. In addition, a retort embankment was observed at Pond 3 during RI activities (See photo in Appendix G) with retorts observed on the interior and exterior of the pond. The retort embankment is estimated to contain approximately 300 yd³ of materials.

4.4.5 TFM Pond 4 Surface Water and Sediment

4.4.5.1 TFM Pond 4 Surface Water Samples

Surface water was collected from one location within TFM Pond 4 in May 2006. The results for surface water samples collected from TFM Pond 4 are presented on Table 4-23. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic and lead were not detected. Cadmium and zinc were detected at concentrations that exceeded one

or more screening levels. Exceedences of the following screening levels were noted for surface water from TFM Pond 4:

Metal Results and Exceedence Summary for TFM Pond 4				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	16	10 U	1,060
Number of samples	1	1	1	1
Number of locations with detections	0	1	0	1
Result > ecological screening level	0	1	0	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	1	0	1
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	1	0	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	0	Not Applicable
Result > Background or Adjacent Farm Pond	0	1	0	1

4.4.5.2 TFM Pond 4 Sediment

Sediment samples were collected from one location in TFM Pond 4. Samples were analyzed for arsenic, cadmium, lead, and zinc. On-Site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary of the TFM Pond 4 sediment data:

TFM Pond 4 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	57	121	975	7,140
Number of sampling locations	1	1	1	1
Number of locations with detections	1	1	1	1
Locations with results > ecological screening level	1	1	1	1
Locations with results > industrial outdoor worker screening level	1	0	1	0
Locations with results > residential soil screening level	1	1	1	0
Locations with results > background or adjacent Farm Pond	1	1	1	1

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from TFM Pond 4 were greater than both background sampling locations and the adjacent Farm Pond.

Pond 4 is approximately 0.08 acres. Based on observations during RI activities, Pond 4 is likely only present for brief periods following rain events. Samples with metal results in excess of industrial outdoor worker and/or residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval in the sample collected from Pond 4. Assuming that the depth of contamination in the pond is similar to the surrounding soils, the depth of contaminated sediment in TFM Pond 4 is approximately 1 ft deep. Approximately 130 yd³ of contaminated sediment is estimated to be present in TFM Pond 4.

4.4.6 TFM Pond 5 Surface Water and Sediment

4.4.6.1 TFM Pond 5 Surface Water Samples

Surface water was collected from one location within TFM Pond 5 in May 2006. The results for surface water samples collected from TFM Pond 5 are presented on Table 4-24. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic, cadmium, and lead were not detected. Zinc was detected at a concentration that exceeded one or more screening levels. Exceedences of the following screening levels were noted for surface water from TFM Pond 5:

Metal Results and Exceedence Summary for TFM Pond 5				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	5 U	10 U	261
Number of samples	1	1	1	1
Number of locations with detections	0	0	0	1
Result > ecological screening level	0	0	0	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	1
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	0	0	1
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	0	0	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	0	Not Applicable
Result > Background or Adjacent Farm Pond	0	0	0	1

4.4.6.2 TFM Pond 5 Sediment

Sediment samples were collected from one location in TFM Pond 5. Samples were analyzed for arsenic, cadmium, lead, and zinc. On-Site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI

residential soil screening level are highlighted in red on this figure. The following table provides a summary of the TFM Pond 5 sediment data:

TFM Pond 5 Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	10 U	10 U	239	808
Number of sampling locations	1	1	1	1
Number of locations with detections	0	0	1	1
Locations with results > ecological screening level	0	0	1	1
Locations with results > industrial outdoor worker screening level	0	0	0	0
Locations with results > residential soil screening level	0	0	0	0
Locations with results > background or adjacent Farm Pond	0	0	1	1

Lead and zinc were the only metals detected in the sample collected from Pond 5. These detections exceeded ecological screening levels. In addition, the lead and zinc concentrations for the sediment sample collected from TFM Pond 5 were greater than both background sampling locations and the adjacent Farm Pond. Pond 5 is approximately 0.06 acres. Based on observations during RI activities, Pond 5 is likely only present for brief periods following rain events. Samples with metal results in excess of ecological screening levels were encountered in the 0 to 0.5 ft bgs interval in the sample collected from Pond 5. Assuming that the depth of contamination in the pond is similar to the surrounding soils, the depth of contaminated sediment in TFM Pond 5 is approximately 0.5 ft deep. Approximately 50 yd³ of contaminated sediment is estimated to be present in TFM Pond 5.

4.4.7 TFM Mid-Site Ravine and Cistern Surface Water and Sediment

4.4.7.1 TFM Mid-Site Ravine and Cistern Surface Water Samples

Surface water was collected from three locations along the mid-site ravine that transverses TFM site near the former smelter operations in May 2006. In addition, water was collected from a cistern located adjacent to the mid-site ravine. A duplicate sample was collected from location MSR-02. The results for surface water samples collected from the mid-site ravine and cistern are presented on Table 4-25. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic, cadmium, and lead were not detected in the water sample from the cistern. Arsenic was not detected in the samples collected from the mid-site ravine. Exceedences of the following screening levels

were noted for surface water from mid-site ravine or cistern:

Metal Results and Exceedence Summary for Mid-Site Ravine and Cistern				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	5 U – 184	10 U – 20	260 – 8,250
Number of samples, includes duplicate	5	5	5	5
Number of locations with detections	0	3	1	5
Result > ecological screening level	0	4	1	5
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	4	0	5
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	4	1	5
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	4	1	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	1	0	Not Applicable
Result > Background or Adjacent Farm Pond	0	3	1	5

4.4.7.2 TFM Mid-Site Ravine and Cistern Sediment

Sediment samples were collected from three locations along the mid-site ravine that transverses TFM site near the former smelter operations. Sediment was not present in the cistern, and a sample could not be collected at that location. Samples were analyzed for arsenic, cadmium, lead, and zinc. On-Site sediment sample results are presented on Table 4-20. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary of the TFM Mid-Site Ravine sediment data:

TFM Mid-Site Ravine Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	195 – 588	255 – 702	2,940 – 8,150	20,700 – 34,700
Number of sampling locations	3	3	3	3
Number of locations with detections	3	3	3	3
Locations with results > ecological screening level	3	3	3	3
Locations with results > industrial outdoor worker screening level	3	1	3	0
Locations with results > residential soil screening level	3	3	3	2
Locations with results > background or adjacent Farm Pond	3	3	3	3

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from the Mid-Site Ravine were greater than both background sampling locations and the adjacent Farm Pond.

The ravine cuts through the former operations area for the smelter and waste materials were observed in the ravine. The ravine is approximately 1,900 ft long and is up to 10 ft wide in places. Samples with metal results in excess of screening levels were encountered in the 0 to 0.5 ft bgs interval at the Mid-Site Ravine. Assuming that the depth of contamination in the ravine is similar to the surrounding soils, the depth of contaminated sediment in the Mid-Site Ravine is approximately 2 ft deep. Approximately 1,400 yd³ of contaminated sediment is estimated to be present in the Mid-Site Ravine.

4.4.8 Strip Mine Pit Surface Water and Sediment

4.4.8.1 Strip Mine Pit Surface Water Samples

Surface water was collected from six locations in the Strip Mine Pit that borders the southern edge of the TFM site. In addition, a duplicate sample was collected from location SMP-03. The results for surface water samples collected from the Strip Mine Pit are presented on Table 4-26. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure. Arsenic, cadmium, lead, and zinc were not detected in surface water samples collected from the Strip Mine Pit.

4.4.8.2 Strip Mine Pit Sediment

Sediment was collected from six locations in the Strip Mine Pit that borders the southern edge of the TFM site. In addition, a duplicate sample was collected from location SMP-03. Samples were analyzed for arsenic, cadmium, lead, and zinc. The sample and duplicate from location SMP-03 were also prepared using TCLP and then analyzed. Sediment results for the Strip Mine Pit are presented on Table 4-26. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary of the Strip Mine Pit sediment data:

Strip Mine Pit Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	14 – 32	10 – 49	180 – 425	1,080 – 3,500
Number of sampling locations, includes duplicate	7	7	7	7
Number of locations with detections	7	7	7	7
Locations with results > ecological screening level	7	7	7	7
Locations with results > industrial outdoor worker screening level	7	0	0	0
Locations with results > residential soil screening level	7	2	2	0
Locations with results > background or adjacent	7	7	7	7

Strip Mine Pit Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Farm Pond				

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from the Strip Mine Pit were greater than both background sampling locations and the adjacent Farm Pond. No exceedences of the toxicity characteristic maximum concentrations were noted.

The Strip Mine Pit borders the southern edge of the TFM site. Smelter waste piles were adjacent to the Strip Mine Pit, and materials appeared to have slumped into the water body (see photographs in Appendix G). Locations SMP-02 through SMP-05 were closest to these waste piles and exhibited the highest metals concentrations. Approximately 3 acres of the Strip Mine Pit was associated with the edge of the former smelter operations area and waste piles. Results in excess of screening levels were encountered in the 0 to 0.5 ft bgs interval in the sediments of the Strip Mine Pit. Assuming that the depth of contamination in the Strip Mine Pit is approximately 2 ft due to sloughing from the adjacent waste piles, approximately 2,400 yd³ of impacted sediment is estimated to be present in the Strip Mine Pit.

4.4.9 Ditches/Drainages of Old US Hwy 169 and Railroad Surface Water and Sediment

4.4.9.1 Ditches/Drainages of Old US Hwy 169 and Railroad Surface Water Samples

Surface water was collected from nine locations along ditches and drainages associated with the eastern border of the TFM and right-of-way of Old US Hwy 169. SEL analyzed the sample collected from OFF-04 in triplicate, and the results were similar. The results for surface water samples collected from the ditches/drainages of Old US Hwy 169 and railroad are presented on Table 4-28. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic was detected in the sample collected from location OFF-18. Cadmium was detected in the samples collected from locations OFF-10 and OFF-16. Lead was detected in the samples collected from four locations. Zinc was detected in the surface water samples collected from all locations along the

ditches/drainages of Old US Hwy 169 and the railroad. Exceedences of the following screening levels were noted:

Metal Results and Exceedence Summary for Ditches/Drainages of Old US Hwy 169 and Railroad				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U – 11	5 U – 20	10 U – 26	42 – 1,170
Number of samples, not including lab replicates	9	9	9	9
Number of locations with detections	1	2	4	9
Result > ecological screening level	0	2	4	8
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	7
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	2	4	7
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	2	4	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	1	Not Applicable
Result > Background or Adjacent Farm Pond	1	2	4	9

4.4.9.2 Ditches/Drainages of Old US Hwy 169 and Railroad Sediment

Sediment samples were collected from nine locations along ditches and drainages associated with the eastern border of the TFM and right-of-way of Old US Hwy 169. SEL analyzed the sample collected from OFF-04 in triplicate, and the results were similar. Samples were analyzed for arsenic, cadmium, lead, and zinc. In addition, a sediment sample collected from location OFF-10 was prepared using TCLP and analyzed. Sediment sample results for the ditches/drainages of Old US Hwy 168 and the railroad tracks are presented on Table 4-29. Samples are split between locations east of the railroad tracks in the drainage associated with Old US Hwy 169 and west of the railroad tracks in the drainage between the TFM and railroad tracks. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary:

Ditches/Drainages of Old US Hwy 169 and the Railroad Tracks Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	20 U – 277	10 U – 975	119 – 3,940	699 – 26,700
Number of sampling locations, not including lab replicates	9	9	9	9
Number of locations with detections	8	6	9	9
Locations with results > ecological screening level	8	6	9	9
Locations with results > industrial outdoor	8	1	6	0

Ditches/Drainages of Old US Hwy 169 and the Railroad Tracks Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
worker screening level				
Locations with results > residential soil screening level	8	6	6	1
Locations with results > background or adjacent Farm Pond	8	6	9	9

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels.

In addition, the metal concentrations for sediment samples collected from the ditches/drainages of Old US Hwy 168 and the railroad tracks were greater than both background sampling locations and the adjacent Farm Pond. TCLP metals analysis was also performed for the sample collected from location OFF-10, and the results for cadmium exceeded the toxicity characteristic maximum concentration. TCLP metal results in excess of screening levels indicate that the sediment at the sampling location OFF-10 should be considered hazardous by characteristic.

Location OFF-10 was located near the outlet of TFM Pond 1 and adjacent to the driveway entering into the TFM site. Location OFF-16 was placed on the opposite side of the driveway and exhibited similar metals concentrations as OFF-10. Downstream locations OFF-17 and OFF-18 exhibited metals concentrations lower than the upstream samples (See Figure 4-5).

The drainages/ditches evaluated are approximately 1,500 ft long and are adjacent of the TFM and on either side of Old US 169 (i.e., three drainages for a total of 4,500 ft). Following storm events, the drainages/ditches can flow approximately 5 ft wide. Samples with metal results in excess of screening levels were encountered in the 0 to 0.5 ft bgs interval. The depth of sediment in the ditches/drainages was estimated to be approximately 0.5 ft based on field observations. Approximately 1,200 yd³ of contaminated sediment is estimated to be present in the ditches/drainages associated with Old US Hwy 169 and the adjacent railroad tracks.

4.4.10 Northern Drainage on (b) (6)

Surface Water and Sediment

4.4.10.1 Northern Drainage on (b) (6)

Surface Water Samples

Surface water was collected from eight locations associated with the northern drainage on (b) (6), parts of which include the former Bartelsville Zinc Smelter property.

Due to turbidity noted at location OFF-09 during sample collection in July 2005 and subsequent elevated metals results, location OFF-09 was resampled in May 2006. In addition, a field duplicate sample was collected from location OFF-14. The results for surface water samples collected from the northern drainage on the property are presented on Table 4-30. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

With the exception of a turbid sample collected from location OFF-09 in July 2005, arsenic was not detected in the surface water samples. Cadmium and zinc were detected in all of the surface water samples collected from the northern drainage on (b) (6). Lead was detected in samples collected from locations nearest the TFM, but was not detected at locations that were further downstream. Metals results for location OFF-09 were lower in the sample collected in May 2006 relative to the sample collected in July 2005. The difference is likely due to the turbid nature of the July 2005 sample. Exceedences of the following screening levels were noted:

Metal Results and Exceedence Summary for Northern Drainage on (b) (6)				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	9 - 810	10 U – 2,560	583 – 61,300
Number of samples, including duplicate and resample	10	10	10	10
Number of locations with detections	1	10	5	10
Result > ecological screening level	0	10	5	10
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	7	1	10
Result > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	10	5	10
Result > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	Not Applicable	9	5	Not Applicable
Result > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	3	1	Not Applicable
Result > Background or Adjacent Farm Pond	1	10	5	10

A culvert passes under the Atchinson Topeka Santa Fe Railroad and Old US 169, and surface water from the TFM passes through this culvert and onto a ponded area on (b) (6). Location OFF-05 represents the most downstream location closest to the culvert. Northern flow from this ponded area was observed during a rain event in May 2006. With the exception of surface water samples collected from location OFF-15, results tended to decrease the further downstream from the culvert. Field notes indicate that smelter waste materials were observed at location OFF-15 beneath the sediment and may have caused the elevated surface water results at this location.

4.4.10.2 Northern Drainage on (b) (6) Sediment

Sediment samples were collected from eight locations associated with the northern drainage on (b) (6), parts of which include the former Bartelsville Zinc Company property. Duplicate sediment samples were collected from locations OFF-08 and OFF-14. Samples were analyzed for arsenic, cadmium, lead, and zinc. In addition, a sediment sample collected from location OFF-15 was prepared using TCLP and analyzed. Sediment sample results associated with the northern drainage on (b) (6) are presented on Table 4-31. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure. The following table provides a summary:

Northern Drainage on (b) (6) Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	24 – 341	31 – 987	417 – 5,080	2,940 – 15,600
Number of sampling locations, including duplicates	10	10	10	10
Number of locations with detections	10	10	10	10
Locations with results > ecological screening level	10	10	10	10
Locations with results > industrial outdoor worker screening level	10	2	6	0
Locations with results > residential soil screening level	10	9	10	0
Locations with results > background or adjacent Farm Pond	10	10	10	10

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels.

In addition, the metal concentrations for sediment samples collected from the northern drainage on (b) (6) were greater than both background sampling locations and the adjacent Farm Pond. OFF-20 was the most downstream location and exhibited the lowest concentrations of target metals.

TCLP metals analysis was also performed for the sample collected from location OFF-15, and the results for cadmium exceeded the toxicity characteristic maximum concentration. TCLP metal results in excess of screening levels indicate that the sediment at the sampling location OFF-15 should be considered hazardous by characteristic. Field notes indicate that apparent smelter waste materials were present beneath the sediment at locations OFF-14 and OFF-15.

The northern drainage on (b) (6) extends approximately 1,500 ft from the culvert passing from the TFM site to the northernmost point of the drainage. Following storm events, ponding was observed in the southern part of the drainage. The depth of sediment in the drainages was estimated to be approximately 0.5 ft based on field observations. Taking into account the area that tends to pond and the drainage ditches, an estimated 1,100 yd³ of impacted sediment is estimated in the northern part of the (b) (6). Field observations indicate that apparent smelter waste is present beneath the sediment near location OFF-14 and OFF-15.

4.4.11 Southern Drainage on (b) (6)

Surface Water and Sediment

4.4.11.1 Southern Drainage on (b) (6)

Surface Water Samples

Surface water was collected from three locations associated with the southern drainage on (b) (6), which includes portions of the former Bartelsville Zinc Company property. The results for surface water samples collected from the southern drainage on the property are presented on Table 4-32. Lead and zinc results for surface water samples are presented on Figure 4-4. Lead or zinc detections that exceed one or more of the applicable screening levels are presented in red on this figure.

Arsenic, cadmium, and lead were not detected in the surface water samples collected from the southern drainage on (b) (6). Zinc was detected in two samples, but only the detection in the sample from OFF-13 exceeded one or more screening levels. The following results and exceedence of screening levels were noted:

Southern Drainage on (b) (6)				
Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (µg/L)	10 U	5 U	10 U	5 U - 849
Number of Sampling Locations	3	3	3	3
Number of Detections	0	0	0	2
Locations with results > ecological screening level	0	0	0	1
Location with results > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Acute	0	0	0	1
Locations with results > Oklahoma Water Quality Criteria, Fish & Wildlife Propagation, Chronic	0	0	0	1
Locations with results > Oklahoma Water Quality Criteria, Water & Fish Consumption, Human Health	0	0	0	Not Applicable
Locations with results > Oklahoma Water Quality Criteria, Fish Consumption, Human Health	0	0	0	Not Applicable

Southern Drainage on (b) (6) Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Result > Background or Adjacent Farm Pond	0	0	0	2

During RI field activities, the field crew performed a reconnaissance in the area in an attempt to find a connection between the Strip Mine Pit and the southern drainage on (b) (6). No apparent connection was located.

4.4.11.2 Southern Drainage on (b) (6) Sediment

Sediment samples were collected from three locations associated with the southern drainage on (b) (6), which includes portions of the former Bartelsville Zinc Company property. Samples were analyzed for arsenic, cadmium, lead, and zinc. Sediment sample results associated with the southern drainage on the property are presented on Table 4-33. The results for lead in sediment are presented on Figure 4-5. Lead detections that exceed the USEPA Region VI residential soil screening level are highlighted in red on this figure; however, no such exceedences were noted for the southern drainage on (b) (6). The following table provides a summary:

Southern Drainage on (b) (6) Metal Results and Exceedence Summary				
	Arsenic	Cadmium	Lead	Zinc
Concentration Range (mg/kg)	16	10 U – 12	140 – 182	520 – 3,590
Number of sampling locations	3	3	3	3
Number of locations with detections	3	2	3	3
Locations with results > ecological screening level	3	2	3	3
Locations with results > industrial outdoor worker screening level	3	0	0	0
Locations with results > residential soil screening level	3	0	0	0
Locations with results > background or adjacent Farm Pond	3	2	3	3

Arsenic was the only metal that exhibited exceedence of the industrial outdoor worker or residential soil screening level. All of the metals exhibited exceedences of the ecological screening levels. In addition, the metal concentrations for sediment samples collected from the southern drainage on the property were greater than both background sampling locations and the adjacent Farm Pond. Results for arsenic,

cadmium, and lead were similar at all three locations sampled in the southern drainage on the property. Increasing concentrations of zinc were noted as sample locations moved to the east.

The southern drainage on (b) (6) extends approximately 1,200 ft. This drainage was observed to be approximately 2 ft wide during a storm event in May 2006. The depth of sediment in the drainage was estimated to be approximately 0.5 ft based on field observations. An estimated 135 yd³ of sediment is present in the southern drainage on (b) (6)

4.5 GROUNDWATER

Groundwater samples were collected to determine the nature and extent of potential groundwater contamination. As presented in Section 2.4, groundwater samples were collected in a staged approach. Direct-push techniques were used to install temporary piezometers, which were used to determine groundwater flow in the area. Following determination of groundwater flow direction using the temporary piezometers, monitoring wells were installed to evaluate the impact to groundwater, if any, at the TFM boundaries (upgradient and downgradient) and downgradient of suspected contamination sources.

4.5.1 Temporary Piezometer Sampling and Data Collection

Eleven temporary piezometers were installed during RI Phase I activities for groundwater sample collection and groundwater flow evaluation (see Sections 2.4.1 and 3.6). The locations of the piezometers (as shown in Figures 2-4 and 3-3) were selected primarily to evaluate the occurrence of groundwater and determine groundwater flow direction. Unfiltered groundwater was collected from nine of these temporary piezometers on September 13, 2005 using a peristaltic pump. Piezometers PZ-10 and PZ-11 were not sampled due to an insufficient volume of water. Groundwater samples were submitted to SEL as unfiltered samples and analyzed for arsenic, cadmium, lead, and zinc. If sufficient water was present, samples were also collected and analyzed for general chemistry parameters including TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate.

Temporary piezometer groundwater sample results are presented on Table 4-34. The unfiltered groundwater sample results were compared to the following screening levels: maximum contaminant levels (MCLs) and USEPA Region VI screening levels for tap water (human health protection). Samples were submitted to SEL as unfiltered, and some of the screening level exceedences may be due to solids present in the sample at the time of collection. Due to lack of water at many locations, filtered

groundwater samples were not collected from the temporary piezometers. The following detections of metals were noted in the temporary piezometer samples:

- Arsenic – Arsenic was detected in groundwater samples collected from three piezometers (PZ-01, PZ-07, and PZ-09). These detections exceeded the MCL and USEPA Region VI human health tap water screening level.
- Cadmium – Cadmium was detected in groundwater samples collected from five piezometers (PZ-01, PZ-06, PZ-07, PZ-08, and PZ-09). With the exception of the sample collected from PZ-06, these detections exceeded the MCL and the USEPA Region VI human health tap water screening level. The cadmium detection noted in the sample collected from PZ-06 exceeded the MCL only.
- Lead – Lead was detected in groundwater collected from all of the piezometers except PZ-05. With the exception of the sample collected from PZ-02, these detections exceeded the MCL and the USEPA Region VI human health tap water screening level. The lead detection noted in the sample collected from PZ-02 did not exceed either screening level.
- Zinc – Zinc was detected in groundwater collected from all of the piezometers. The zinc results for these groundwater samples did not exceed either screening level with the exception of PZ-09 which exceeded the MCL.

Screening level exceedences may be related to sample turbidity and solids present in the unfiltered groundwater at the time of sample collection. Due to lack of available water, filtered samples were not collected.

4.5.2 RI Phase I Monitoring Well Sampling and Data Collection

Five monitoring wells were installed at the TFM during RI Phase I activities. The locations of the five monitoring wells were selected to best characterize the site based on known or estimated source locations and to further evaluate groundwater flow direction. One upgradient well (MW-01) was installed to serve as a background well for the TFM. Monitoring Well MW-01 is located upgradient of the source area (as indicated by groundwater flow direction obtained from the temporary piezometers) and is unlikely to be impacted by historical site use. Four additional monitoring wells (MW-02 to MW-05) were installed downgradient in the source area to evaluate potential contaminant impacts to groundwater.

Monitoring Wells MW-01 to MW-05 were sampled on September 29, 2005, and the existing residential well (RW-01) was sampled on October 3, 2005. All wells were sampled using disposable polyethylene bailers. Due to turbidity noted during sample collection, an unfiltered and field-filtered sample was submitted for MW-05. Groundwater samples from all other wells were submitted to SEL unfiltered. Samples were analyzed by SEL for arsenic, cadmium, lead, and zinc. Additionally, samples from Monitoring Wells MW-01, MW-03, and MW-04 were analyzed for general chemistry parameters including TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate. Temperature, pH, specific conductivity, and turbidity were also measured in the field.

Due to the limited occurrence of groundwater during the initial groundwater sampling event, further monitoring well sampling was conducted on May 11 and 12, 2006 to obtain a full set of groundwater analytical and field data for RI Phase I activities. Field-filtered samples were collected from Monitoring Wells MW-01 through MW-04 and RW-01 for analysis of arsenic, cadmium, lead, and zinc. In addition, Monitoring Wells MW-02 and MW-05 were sampled for general chemistry parameters. All samples were analyzed by SEL. Temperature, pH, specific conductivity, and turbidity were also measured in the field.

4.5.2.1 RI Phase I Upgradient Groundwater Sample Results

As mentioned previously, MW-01 was installed to serve as a background well for TFM during RI Phase I. Monitoring Well MW-01 is located upgradient of the source area (as indicated by groundwater flow direction obtained from the temporary piezometers) and is unlikely to be impacted by historical site use (See Figure 3-3). Monitoring well groundwater sample results for background well MW-01 are presented on Table 4-35. Groundwater sample results were compared to the following screening levels: MCLs and USEPA Region VI human health tap water. Samples were submitted to SEL filtered and unfiltered.

Total zinc was the only metal detected in the samples collected from MW-01 during the RI Phase I investigation, and it was only detected in the unfiltered sample. This total zinc result was below the MCL and USEPA Region VI human health tap water screening level. Dissolved zinc was not detected in the filtered sample collected from MW-01, suggesting that total zinc detection was related to the presence of suspended solids in the unfiltered sample.

4.5.2.2 RI Phase I Groundwater Sample Results

Monitoring well groundwater sample results for investigative Monitoring Wells MW-02 through MW-05 and residential well RW-01 are presented on Tables 4-36, 4-37, 4-38, 4-40, and 4-42. Groundwater

sample results were compared to the following screening levels: MCLs and USEPA Region VI human health tap water. Samples were submitted to SEL filtered and unfiltered. A comparison of the results indicated that filtering the samples greatly reduced contaminant levels with the exception of MW-04. The results also indicated that a majority of the screening level exceedences occurred in unfiltered samples, suggesting that the presence of suspended solids had a significant impact on sample results. The following paragraphs detail the metal results for the monitoring well samples:

- **Arsenic** – Total arsenic was only detected in the unfiltered sample from MW-05. Dissolved arsenic was not detected in the filtered sample collected from this well, suggesting that the detection was related to solid particles present in the unfiltered sample. The total arsenic detection exceeded the MCL and USEPA Region VI human health tap water screening level.

Arsenic in Groundwater Summary		
	Unfiltered, Total Arsenic	Filtered, Dissolved Arsenic
Concentration Range (µg/L)	10 U - 17	10 U
Number of sampling locations	5	5
Number of locations with detections	1	0
Locations with results > MCL	1	0
Locations with results > human health tap water screening level	1	0

- **Cadmium** – Total cadmium was detected in the filtered and unfiltered samples collected from MW-04 and the unfiltered sample collected from MW-05. Dissolved cadmium was not detected in the filtered sample from MW-05, suggesting that the detection was related to solid particles present in the unfiltered sample. Both the filtered and unfiltered cadmium detections exceeded the MCL and USEPA Region VI human health tap water screening level for MW-04. In addition, the total cadmium result for the unfiltered sample collected from MW-05 exceeded the MCL.

Cadmium in Groundwater Summary		
	Unfiltered, Total Cadmium	Filtered, Dissolved Cadmium
Concentration Range (µg/L)	5 U - 105	5 U - 64
Number of sampling locations	5	5
Number of locations with detections	2	1
Locations with results > MCL	2	1
Locations with results > human health tap water screening level	1	1

- Lead – Total lead was detected in the unfiltered samples collected from MW-03, MW-04, MW-05, and RW-01. Dissolved lead was not detected in any of the filtered samples, suggesting that the detections were related to solid particles present in the unfiltered samples. The total lead detections noted in unfiltered samples from MW-03, MW-05, and RW-01 exceeded the MCL and USEPA Region VI human health tap water screening level. The total lead detection noted in unfiltered sample MW-04 did not exceed either screening level.

Lead in Groundwater Summary		
	Unfiltered, Total Lead	Filtered, Dissolved Lead
Concentration Range (µg/L)	10 U - 233	10 U
Number of sampling locations	5	5
Number of locations with detections	4	0
Locations with results > MCL	3	0
Locations with results > human health tap water screening level	3	0

- Zinc – Total zinc was detected in unfiltered samples collected from all of the wells. The total zinc detections in these unfiltered groundwater samples did not exceed either the MCL or the USEPA Region VI screening level for human health tap water. Dissolved zinc was detected in filtered samples collected from MW-02, MW-04, MW-05, and RW-01. The dissolved zinc detections noted did not exceed either screening level.

Zinc in Groundwater Summary		
	Unfiltered, Total Zinc	Filtered, Dissolved Zinc
Concentration Range (µg/L)	190 – 4,900	5 U – 2,830
Number of sampling locations	5	5
Number of locations with detections	5	4
Locations with results > MCL	0	0
Locations with results > human health tap water screening level	0	0

Results of the RI Phase I groundwater data indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of dissolved cadmium at MW-04, concentrations of dissolved metals within the wells were below screening levels. The limited presence of metals constituents within the dissolved phase groundwater indicated that migration of contaminants from the site was limited. Further evaluation of groundwater downgradient of Monitoring Well MW-04 was performed during Phase II activities to provide horizontal delineation of metals in groundwater. Data obtained during the RI Phase I activities

indicated that limited evaluation of bedrock groundwater at TFM was warranted. Due to the presence of elevated metals within the dissolved phase groundwater at Monitoring Well MW-04, further investigation of bedrock groundwater in this area was performed during the RI Phase II investigation to provide vertical delineation of metals in groundwater.

4.5.3 RI Phase II Monitoring Well Sampling and Data Collection

Two additional monitoring wells were installed during Phase II activities. The locations of the monitoring wells were selected to further evaluate the potential occurrence of groundwater within the bedrock beneath the TFM and monitor the potential migration of dissolved metals (specifically cadmium) in the downgradient direction of the TFM.

Monitoring Well MW-04D was installed adjacent to Monitoring Well MW-04 to determine the presence of groundwater within the bedrock. This location was selected due to the presence of elevated metals within dissolved phase groundwater at Monitoring Well MW-04. The monitoring well was installed screening only the bedrock zone.

A second monitoring well, MW-06, was installed to the east of the TFM, downgradient of Monitoring Well MW-04 to evaluate the potential migration of dissolved metals offsite. The location of this well was selected based on groundwater flow direction observed during RI Phase I activities.

Following installation and development of the RI Phase II monitoring wells, groundwater samples were collected from the Phase I and Phase II monitoring wells and the residential well. Due to the presence of dissolved solids during previous Phase I sampling events, groundwater samples were collected using low-flow sample collection techniques with a peristaltic pump and Teflon-lined polyethylene tubing.

Groundwater samples were collected from each well and submitted to SEL for analysis of arsenic, cadmium, lead, zinc, and general water chemistry parameters (TOC, COD, alkalinity, nitrate as nitrogen, sulfate, and chloride). Due to insufficient sample volume, TOC was not collected for Monitoring Wells MW-01 and MW-02. Samples for analysis of metals were submitted to the SEL as both field-filtered and unfiltered samples to determine the impact of sample turbidity upon the results. Temperature, pH, specific conductivity, and turbidity were also measured in the field.

4.5.3.1 RI Phase II Upgradient Groundwater Sample Results

MW-01 was used as a background well for TFM during RI Phase II. Monitoring Well MW-01 is located upgradient of the source area (as indicated by groundwater flow direction obtained from the temporary piezometers) and is unlikely to be impacted by historical site use (See Figure 3-3). Monitoring well groundwater sample results for background well MW-01 are presented on Table 4-35. Groundwater sample results were compared to the following screening levels: MCLs and USEPA Region VI human health tap water. Samples were submitted to SEL filtered and unfiltered.

Total zinc was the only metal detected in the samples collected from MW-01; it was detected in both the unfiltered and filtered sample. These total zinc results were below the MCL and USEPA Region VI human health tap water screening level. Cadmium and lead results for MW-01 are posted on Figure 4-6.

4.5.3.2 RI Phase II Groundwater Sample Results

Monitoring well groundwater sample results for investigative Monitoring Wells MW-02 through MW-06 and residential well RW-01 are presented on Tables 4-36 through 4-42. Groundwater sample results were compared to the following screening levels: MCLs and USEPA Region VI human health tap water. Samples were submitted to SEL filtered and unfiltered. A comparison of the results indicated that there was little difference between the filtered and unfiltered samples. The following paragraphs detail the metal results for the monitoring well samples:

- Arsenic – Total arsenic was not detected in any of the unfiltered samples, and dissolved arsenic was not detected in any of the filtered samples.

Arsenic in Groundwater Summary		
	Unfiltered, Total Arsenic	Filtered, Dissolved Arsenic
Concentration Range (µg/L)	10 U	10 U
Number of sampling locations	7	7
Number of locations with detections	0	0
Locations with results > MCL	0	0
Locations with results > human health tap water screening level	0	0

- Cadmium – Total cadmium was detected in the filtered and unfiltered samples collected from MW-04 with similar results. Both the filtered and unfiltered cadmium detections exceeded the MCL and USEPA Region VI human health tap water screening level for MW-04. Cadmium results for the Phase II sampling event are posted on Figure 4-6.

Cadmium in Groundwater Summary		
	Unfiltered, Total Cadmium	Filtered, Dissolved Cadmium
Concentration Range (µg/L)	5 U - 48	5 U - 47
Number of sampling locations	7	7
Number of locations with detections	1	1
Locations with results > MCL	1	1
Locations with results > human health tap water screening level	1	1

- Lead – Total lead was not detected in either the unfiltered samples or the filtered samples. Lead results for the Phase II sampling event are posted on Figure 4-6.

Lead in Groundwater Summary		
	Unfiltered, Total Lead	Filtered, Dissolved Lead
Concentration Range (µg/L)	10 U	10 U
Number of sampling locations	7	7
Number of locations with detections	0	0
Locations with results > MCL	0	0
Locations with results > human health tap water screening level	0	0

- Zinc – Total zinc was detected in unfiltered samples collected from all of the wells except for MW-06. The total zinc detections in these unfiltered groundwater samples did not exceed either the MCL or the USEPA Region VI screening level for human health tap water. Dissolved zinc was also detected in all of the samples except for MW-06. The dissolved zinc detections noted did not exceed either screening level.

Zinc in Groundwater Summary		
	Unfiltered, Total Zinc	Filtered, Dissolved Zinc
Concentration Range (µg/L)	5 U – 1,830	5 U – 1,790
Number of sampling locations	7	7
Number of locations with detections	6	6
Locations with results > MCL	0	0
Locations with results > human health tap water screening level	0	0

Results of the RI Phase II groundwater data indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of unfiltered and filtered cadmium at MW-04, concentrations of dissolved metals within the

wells were below screening levels. The limited presence of metals constituents within the dissolved phase groundwater indicated that migration of contaminants from the site was limited. The lack of metal constituents in MW-06 confirms that migration of contaminants offsite is limited. The limited presence of metals constituents at MW-04D also indicates that constituents are not migrating vertically. The detections of zinc at MW-04D closely resemble those of the upgradient monitoring well, MW-01.

4.5.4 Groundwater Summary

Results of the RI Phase I groundwater data indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of dissolved cadmium at MW-04, concentrations of dissolved metals within the wells were below screening levels. The limited presence of metals constituents within the dissolved phase groundwater indicated that migration of contaminants from the site was limited. Further evaluation of groundwater downgradient of Monitoring Well MW-04 was performed during Phase II activities to provide horizontal and vertical delineation of metals in groundwater.

Results of the RI Phase II groundwater data indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of unfiltered and filtered cadmium at MW-04, concentrations of dissolved metals within the wells were below screening levels. The limited presence of metals constituents within the dissolved phase groundwater and a lack of metal constituents in MW-06 indicated that migration of contaminants from the site was limited. The limited presence of metals constituents at MW-04D also indicates that constituents are not migrating vertically. The detections of zinc at MW-04D closely resemble those of the upgradient monitoring well, MW-01.

As previously stated, there was a difference in sampling techniques used for the Phase I and Phase II sampling events. During the Phase I sampling event, bailers and peristaltic pumps were used for sample collection. During the Phase II sampling event, low-flow sampling techniques were implemented to minimize the effects of turbidity on the sample. This difference is evident in the quality of the data obtained from the two sampling events. For this reason, it is believed that the data collected during the Phase II sampling event is more representative of the groundwater contamination at the TFM site, and Phase I detections were likely the result of suspended solids in the samples.

4.6 ECOLOGY/VEGETATION NATURE AND EXTENT OF CONTAMINATION

An ecological/vegetation sample collection summary was previously provided on Table 2-8, and the sampling locations were presented on Figure 2-4. Ecological/vegetation samples were collected at the TFM site and in the surrounding area during the 2004, 2005, and 2006 growing seasons.

4.6.1 Background Ecological/Vegetation Samples

Background ecological samples were collected from the Oxley Nature Center in Tulsa, Oklahoma during the 2004 and 2005 growing seasons. Samples were planned for collection during the 2006 growing season, but blackberries were not present at the Oxley Nature Center during the July 2006 sampling event. Samples were collected of blackberries (washed and unwashed), leaves from the blackberry bushes (washed and unwashed), roots from the blackberry bushes (washed), and soils surrounding the roots. The samples were analyzed by STL Burlington for arsenic, cadmium, lead, zinc, and pH.

Analytical results for the background blackberries, leaves, and roots are presented on Table 4-43.

Generic screening values are not available for the blackberries, leaves, and roots samples. These data will be evaluated further as part of the human health and ecological risk assessment. A summary of the background data is presented in the following paragraphs:

- Blackberries - Arsenic, cadmium, and lead were not detected in the background blackberry samples collected during the 2004 growing season. Zinc was the only constituent detected in these samples. Based on the similarity of the unwashed versus washed berry data, the zinc appears to be the result of plant uptake. Arsenic, cadmium, lead, and zinc were not detected in the background blackberry samples collected during the 2005 growing season.
- Leaves – Arsenic and cadmium were not detected in the background samples of leaves from the Oxley Nature Center that were collected during the 2004 growing season. Lead was only detected in the leaves of the washed background samples, and zinc was detected in both the samples of washed and unwashed leaves. For leaf samples collected during the 2005 growing season, arsenic was detected in the sample of unwashed leaves and zinc was detected in both the samples of washed and unwashed leaves. Cadmium and lead were not detected.
- Roots – Cadmium was not detected in the background sample of roots that were collected during the 2004 growing season. However, arsenic, lead, and zinc were detected in this sample. Only

arsenic and zinc were detected in the background sample of roots that were collected during the 2005 growing season.

- Soil – Results for the background soil samples from the Oxley Nature Center are presented on Table 4-46. Arsenic, lead, and zinc were detected in background soil samples collected during the 2004 and 2005 growing seasons. The arsenic results from both the 2004 and 2005 growing seasons exceeded the USEPA Region VI screening levels for an industrial indoor worker, industrial outdoor worker, and residential soil. None of the other metals exhibited concentrations in excess of screening levels.

4.6.2 Ecological/Vegetation Samples

Samples were collected by DEQ at three locations in June 2004. Sample points for the 2004 event consisted of two locations along the eastern boundary of the TFM, which were labeled “TFM” and one location on [REDACTED] (b) (6) [REDACTED] adjacent to the TFM, which was labeled “BM”. Samples were also collected during RI Phase I activities at two locations in June 2005. Sample points for the 2005 event consisted of one location at the TFM, which was labeled “EC-02,” and one location on [REDACTED] (b) (6) [REDACTED] (b) (6) adjacent to the TFM, which was labeled “EC-01”. During both events, blackberry bushes were sampled for blackberries (washed and unwashed), leaves (washed and unwashed), roots (washed), and soils from the root area. The samples were analyzed by STL Burlington for arsenic, cadmium, lead, and zinc. Additionally, pH analysis was performed on soils and wastes collected from the root area. Three of the soil and waste samples that were collected from the root area were also prepared using TCLP and analyzed for arsenic, cadmium, and lead.

A third round of ecological/vegetation sampling was conducted during Phase II RI activities in 2006 to provide data from an additional growing season for analysis. Sample points for the July 2006 event consisted of one location at the TFM, which was labeled “EC-02,” and one location on 10710 E 136th Street N property adjacent to the TFM, which was labeled “EC-01.” Sample collection was limited to blackberry samples and the associated wash water (i.e., rinsate). Washed and unwashed samples of the blackberries were collected. In addition, the water that was used to wash the berries was collected. Samples of unwashed blackberries were used to represent metals content due to aerial deposition. Analyzing the rinse water provided additional details regarding metals that had been aurally deposited on the berries, and subsequently removed by washing. Samples of washed blackberries were used to represent plant uptake. The samples were submitted to STL Burlington for analysis of arsenic, cadmium, lead, and zinc.

Ecological/vegetation sample results are presented on Tables 4-43 through 4-46. Results for vegetation samples collected from [REDACTED] (b) (6) [REDACTED] are presented on Table 4-44, and results for vegetation collected from the TFM site are presented on Table 4-45. Generic screening values are not available for the blackberries, leaves, and roots samples. These data will be evaluated further as part of the human health and ecological risk assessment. A summary of the data is presented in the following paragraphs:

- Blackberries - Arsenic, cadmium, and lead were not detected in blackberry samples collected from [REDACTED] (b) (6) [REDACTED] N during the 2004 growing season. Zinc was the only constituent detected in these samples. Lead and zinc were detected in the washed and unwashed blackberry samples that were collected on the TFM site during the 2004 growing season. When comparing results for ripe berries, lower results were noted for the washed versus unwashed samples. This suggests that aerial deposition of dust rather than plant uptake is the primary mechanism for metals contamination of the blackberries.

Lead and zinc were the only metals detected in the blackberry sample that were collected during the 2005 and 2006 growing seasons from both [REDACTED] (b) (6) [REDACTED] and TFM Site. In particular, lead was detected only in the samples of unwashed berries. Zinc was detected in both samples of washed and unwashed berries. Zinc results were similar for the washed and unwashed samples, suggesting plant uptake.

- Leaves - Arsenic, cadmium, and lead were not detected in samples of leaves that were collected from the [REDACTED] (b) (6) [REDACTED] property in the 2004, 2005, or 2006 growing seasons. Zinc was the only metal detected in these off-site samples. Lower results were noted for the washed versus unwashed leaf samples.

Arsenic, lead, and zinc were detected in the leaf samples that were collected on the TFM property during the 2004, 2005, and 2006 growing seasons. Lower results were noted for the washed versus unwashed leaves samples. This suggests that aerial deposition of dust rather than plant uptake is the primary mechanism for metals contamination of the leaves.

- Roots - Cadmium was not detected in the background or off-site private property samples collected during the 2004 growing season, but was detected in the sample collected during the 2005 growing season. Arsenic, cadmium, lead, and zinc were detected in all of the root samples that were collected on the TFM property during the 2004 and 2005 growing season. The metal concentrations for root samples that were collected on the TFM property were greater than those

collected from off-site locations, suggesting root uptake from the smelter waste.

- Soil/Waste - Results for soil and waste samples that were collected from surrounding the plant roots are presented on Table 4-46. Each of the samples exhibited detections of arsenic, cadmium, lead, and zinc. Detections were highest in the samples collected from the TFM property, and each of these samples exhibited results that exceeded several screening levels. Additionally, results for the TCLP analysis of lead for samples collected from the TFM exceeded the screening criteria, indicating that the soil and waste materials for these samples are hazardous by characteristic.

4.7 PERIMETER AIR MONITORING NATURE AND EXTENT OF CONTAMINATION

Continuous perimeter air monitoring was conducted from August 24 through 30, 2005 (i.e., 24-hours of continuous sampling over seven days). Filters were changed daily during the sampling event, and the filters were submitted to STL Burlington for analysis of TSP, PM₁₀, and airborne particulate metals (arsenic, cadmium, lead, and zinc). The sample collection summary was previously presented on Table 2-9, and the sampling locations were previously presented on Figure 2-4.

Based on wind rose data obtained from the Tulsa International Airport (See Appendix I), it was anticipated that the southern sampling station, AQ-02, would serve as the upwind or background location and northern sampling station, AQ-01, would serve as the downwind or investigative location for the entire sampling event. In contrast to expectations based upon historical data, the wind direction was variable during the sampling event. Winds were predominantly from the south during the first three days of sampling and switched to the north during the last four days of sampling after a weather front moved through the area. Therefore, the identity of the upwind, background sampling location and downwind, investigative sampling location was determined daily based upon the prevailing wind at the time of sampling, as follows:

- Upwind, background location: The upwind, background sampling point was identified as the southern station, AQ-02, for the first three days of sampling and the northern station, AQ-01, for the last four days of sampling.
- Downwind, investigative location: The downwind, investigative sampling point was identified as the northern station, AQ-01, for the first three days of sampling and the southern station, AQ-02, for the last four days of sampling.

During the sampling event, daytime high temperatures varied between 90 to 96 degrees Fahrenheit (°F) and overnight lows varied between 79 to 84 °F. The average humidity varied from 63 to 75 percent. Strong storms were noted on Day 3 as a front moved through the area, and approximately 0.66 inches of precipitation fell during the storm event. Average winds speeds ranged from 4 to 10 miles per hour (mph), and gusts from 12 to 26 mph were noted.

4.7.1 Background Perimeter Air Monitoring

Background air monitoring results are provided on Table 4-47. Air monitoring sample results were compared to the following screening levels: USEPA Region VI human health screening levels and the national emissions standards for hazardous air pollutants (NESHAPs). Results are provided for each day, and the specific day of sampling is noted in the “comments” line of Table 4-47. In addition, a 7-day average concentration for background was calculated. The location of the sampling station on the TFM is provided in the “location” line of this table for comparison with prevailing wind. Cadmium and zinc were not detected. Lead was detected in all samples, but the results were less than the NESHAP. Arsenic was detected in the samples collected on Day 3 and Day 7, and both results exceeded the USEPA Region VI human health screening level.

4.7.2 Perimeter Air Monitoring

Air monitoring results are provided on Table 4-48. Air monitoring sample results were compared to the following screening levels: USEPA Region VI human health screening levels and the NESHAPs. Results are provided for each day of sample collection, and the specific day of sampling is noted in the “comments” line of Table 4-48. In addition, a 7-day average concentration for the downwind, investigative sample was calculated. The location of the sampling station on the TFM is provided in the “location” line of this table for comparison with prevailing wind. Cadmium and zinc were not detected. Lead was detected in all samples, but the results were less than the NESHAP. Arsenic was detected in the sample collected on Day 7, and the result exceeded the USEPA Region VI human health screening level. Arsenic and lead detections were similar to the background value (See Table 4-47), suggesting that the TFM is not currently a source of airborne contamination to off-site locations.

* * * *

5.0 CONTAMINANT FATE AND TRANSPORT

The purpose of this section is to provide a detailed discussion of contaminant fate and transport at the Site. This will include a discussion of the chemical and physical properties of constituents and the potential routes of constituent migration.

As discussed in Section 4.1, background values were calculated by using 95 ProUCL version 3.0. If there were not enough samples collected to calculate a 95 UCL for a given matrix, the highest detected concentration of each analyte was used as the background value. The fate and transport of chemicals exceeding background values in soil, groundwater, surface water, sediment, air, washed and unwashed produce, and fish tissue are discussed in the following sections.

A comparison of analytical data to background values indicates that four metals (arsenic, cadmium, lead, and zinc) were detected above background levels in one or more surface and subsurface soil samples, groundwater samples, surface water samples, and sediment samples. In addition, two metals (arsenic and lead) exceeded background levels in the air quality samples; three metals (arsenic, lead, and zinc) exceeded background levels in washed produce; four metals (arsenic, cadmium, lead, and zinc) exceeded background levels in unwashed produce samples. One metal (zinc) was detected in fish tissue, however there are no available background values for fish tissue. The level of zinc detected in fish tissue was below the USEPA Region III RBC table for fish ingestion.

Smelting operations at the Site likely contributed to the introduction of contaminants into the environment. Known sources of contamination include slag, used/broken retorts, and particulate emissions from the smokestack. As discussed in Section 3.0, soil at the TFM site is comprised of unconsolidated overburden that primarily consists of silt, clay, silty loam, and shale sediments and residuum underlain by bedrock of the Pennsylvanian-aged Seminole Formation. Based on information obtained during the Phase I and Phase II investigations, bedrock was encountered beneath the TFM site at depths ranging from 7.2 to 12.5 ft bgs. The direction of groundwater flow at the site is generally to the south/southeast. The clay content of the overburden soil would tend to adsorb metals and some nitrogen-based compounds. Contaminants reaching more porous material are less likely to be retained and more likely to be leached to the groundwater. Potential migration pathways to be considered included: surface water runoff carrying sediment or soil particles; migration to subsurface soils; migration to groundwater; absorption and metabolization by bacteria and plants; and by slumping of slag piles into surface water features. Some constituents may also be transported in the air by the blowing of fugitive dust or by wet

deposition.

5.1 CHEMICAL AND PHYSICAL CHARACTERISTICS OF CONSTITUENTS

Contaminant behavior in the environment is an important determinant of exposure pathways and concentrations. Contaminant behavior is a function of physical and chemical properties specific to the contaminant and characteristics of the matrix in which it exists. Important physical and chemical properties include solubility in water, vapor pressure, sorption, and biodegradation. A general discussion of each of these properties is provided below followed by a more detailed discussion of the fate and transport mechanisms influencing the constituents detected above background levels at the Site.

Solubility

Water solubility refers to the maximum concentration of a chemical that dissolves in a given amount of pure water. The solubility of a contaminant is important to understanding its ability to migrate in the environment. Highly water-soluble chemicals are less strongly adsorbed to soil and can be readily leached to groundwater. Additionally, highly water-soluble chemicals tend to volatilize less from water and to be more biodegradable.

Vapor Pressure

Vapor pressure is a measure of the volatility of a chemical in pure state and is an important determinant of the rate of volatilization from contaminated soils and waters. In general, chemicals with low vapor pressures and high affinity for soils or water are less apt to vaporize. Henry's law constants incorporate molecular weight, solubility, and vapor pressure to indicate the degree of volatility of a chemical in solution as follows:

Extent of Volatility	Henry's Law Constant Ranges (atm*m ³ /mol)
Nonvolatile	$<3 \times 10^{-7}$
Low Volatility	3×10^{-7} to 1×10^{-5}
Moderate Volatility	1×10^{-5} to 1×10^{-3}
High Volatility	$>1 \times 10^{-3}$

Sorption

Sorption (adsorption/absorption) is defined as the accumulation of an element on the surface of soil particles with a decrease in the concentration of the dissolved element in water. Clay surfaces possess negative charges. The soil mineral negative surface charge is responsible for attracting and accumulating cationic species of elements. Humus is also responsible for the accumulation of cationic species of elements or compounds on soil surfaces. Humus is the relatively stable fraction of soil organic matter, which remains in soil after the chemicals comprising plant and animal residues have decomposed. The sorption of compounds to sediments, suspended soils, and soils limits the fraction available for other fate and transport processes.

The organic content of the soil influences the degree to which compounds will be adsorbed by soil particles. Many organic compounds will be more extensively adsorbed by soil particles if the soil contains greater amounts of organic material. Since the vadose zone typically exhibits higher organic content in soils than the saturated zone, movement of compounds through the vadose zone will generally be much slower. The sorptive characteristics of a compound are expressed as partition coefficients, which are defined as the relative concentrations of a given chemical in two phases or matrices. The partition coefficients used to define the sorptive characteristics of compounds include K_{ow} , K_d , and K_{oc} . K_{ow} is generally defined as the ratio between a chemical concentration in octanol to that in water at steady state condition; K_d is the ratio of a contaminant concentration in a solid to the contaminant concentration in the surrounding aqueous solution; and K_{oc} is the K_d coefficient normalized to the concentration of organic carbon in the solid phase.

In general, the higher the K_{oc} value, the higher the tendency for a compound to sorb to organic soil matter. The sorptive tendency of a compound is dependent upon the soil adsorption coefficient (K_{oc}) as follows:

Very weakly sorbed	< 10
Weakly sorbed	10 – 100
Moderately sorbed	100 – 1,000
Moderately to strongly sorbed	1,000 – 10,000
Strongly sorbed	10,000 – 100,000
Very strongly sorbed	> 100,000

Biodegradation

The persistence of a constituent in a particular environmental medium is a measure of the length of time that it remains in that medium. Biodegradation is a biological process whereby chemical compounds degraded to other products. Many variables affect the rate at which biodegradation occurs, including temperature, pH, moisture and oxygen content, presence of microorganisms, presence of food and nutrients, and chemical properties and concentrations. Compounds with lower molecular weights tend to have a higher biodegradation rate. The biological breakdown of a chemical compound could result in a product or products that are more toxic than the original compound.

The longer a compound remains in a medium, the more persistent it is in that medium. The term half-life is often used when discussing persistence. Half-life is the time required for half the amount of a substance to degrade by natural processes. Using the half-life value, the persistence of a compound in an environmental medium can be predicted. It takes between four and five half-lives to reduce the original concentration by 95 percent. The persistence of a compound may also be affected by adsorption. For example, the soil-or-sediment binding capacity of a chemical may act as a catalyst for chemical degradation, or it may protect the chemical from biodegradation. Bioaccumulation may increase a chemical's persistence by protecting the chemical from processes of environmental degradation.

5.2 MIGRATION PATHWAYS/FATE AND TRANSPORT OF SITE CONTAMINANTS

The fate and transport mechanisms and migration pathways for each of the constituents detected above background levels at the Site are discussed in the following sections. Table 5-1 summarizes the constituents, the media in which they were detected, and the properties that influence the migration and persistence of each of the constituents.

Four metals were detected above background levels in one or more of the various media in the samples evaluated during the Phase I and Phase II field activities. Predicting the migration of metals in the environment is complex because metals can exist in a variety of forms. For instance, metals may exist as charged particles, such as ions in solution, or in an uncharged or neutral state. Metals may also interact with both inorganic and organic species to form a variety of different compounds of variable solubilities. Multiple oxidation states of some metals further complicate their behavior. The concentration of metals in the soil, at any given time, is governed by a number of interrelated processes, including inorganic and organic complexation, oxidation-reduction reactions, precipitation/dissolution reactions, and adsorption/desorption reactions. The kinetic component that is critical to predict the behavior of metals in soils cannot be assessed easily. Analytical procedures used to determine metal concentrations in soil do

not give an indication as to the chemical form of the metal. Thus, only general fate and transport information for metals is discussed below.

5.2.1 Arsenic

Because of its multiple oxidation states and its tendency to form soluble complexes, the geochemistry of arsenic is both intricate and not well characterized. The solubility of arsenic varies widely according to the oxidation state. In natural environments, four oxidation states are possible for arsenic: 3^- , 0, 3^+ , and 5^+ . The adsorption of arsenic onto clays, iron oxides, and humic material are important fate processes. Co-precipitation or sorption of arsenic with hydrous oxides of iron is probably the most important removal process. The rate and extent of adsorption decreases with increasing salinity and increasing pH. Arsenic is relatively immobile in soils due to its binding to soil particles, but may be leached under the appropriate conditions. It binds to clay, iron oxides, and aluminum hydroxides.

5.2.2 Cadmium

In soil, cadmium may be adsorbed by clay minerals, carbonates or hydrous oxides of iron and manganese. Additionally, cadmium may be precipitated as cadmium carbonate, hydroxide, and phosphate. Cadmium is adsorbed by the soil solid phase or is precipitated at a pH greater than 6 SU. Cadmium forms soluble complexes with inorganic and organic ligands, which increases the mobility of cadmium in soil.

5.2.3 Lead

Lead is transferred continuously between air, water, and soil. Sorption to sediments is the dominant fate process of lead in natural waters. Precipitation with hydroxides, carbonate, sulfate, and sulfide results in decreased dissolved lead concentrations. Lead undergoes specific adsorption at mineral interfaces, precipitation of sparingly soluble solids, and formation of relatively stable organic-metal complexes/chelates with organic matter. Complexation of lead with organic matter increases its adsorptive affinity for clays and other mineral surfaces. Lead is strongly retained by most soil. At pH values above 6 SU, lead is either adsorbed on clay surfaces or forms lead carbonate. Elemental lead cannot be broken down, but lead compounds can be transformed to other products.

5.2.4 Zinc

Zinc occurs in the environment primarily in the 2^+ oxidation state. Zinc is likely to be strongly sorbed to soil and adsorption of zinc increases with pH. However, soil conditions will affect the tendency of zinc to be sorbed. In waters, the metal often forms complexes with a variety of organic and inorganic

compounds and partitions to sediments. Therefore, sorption of zinc is the dominant fate of this metal. Zinc is generally not soluble in water.

5.2.5 Summary

Much of the discussion provided for the fate and transport of metals in this section is very generalized. Although analytical results indicated that metals are present in surface and subsurface soils, groundwater, surface water, sediment, air, washed and unwashed produce, and fish tissue samples collected at the Site, the chemical form for each of the metals is unknown. Therefore, providing a more specific fate and transport discussion is difficult.

Metals will generally be very persistent in the environment. Many of the compounds formed by metals will be soluble to some degree and may be broken down to other products. However, each of the metals in their elemental form will not volatilize, will be virtually insoluble in water, and will not be broken down. The main transport mechanisms for the metals from the Site will be wind and surface water. Metals present in surface soil at the Site will attach to dust particles and can be carried long distances by the wind, settling out on the ground surface. Precipitation events will transport metals into the subsurface soils or into surface water bodies. Metals will have a tendency to bind to soil and sediment particles and not be leached into the groundwater.

5.3 SUMMARY

The available data indicates that minor leaching from surface soil to subsurface soil and groundwater may be occurring. Arsenic, cadmium, lead, and zinc were detected above background levels in surface water, sediment, surface soil, subsurface soil, groundwater, and washed and unwashed produce. There are no background values available for fish tissue. However, the zinc detection in fish tissue is well below the USEPA Region III RBC for fish tissue.

Metals are the contaminants of concern at the Site. Although overland flow to surface water and sediment is likely at the Site, slag/waste piles have also been observed to have collapsed into the Strip Mine Pit, and a culvert to the Collinsville Smelter site was noted, it does not appear that any of these pathways are major contaminant transport routes. Most of the contaminants were detected in surface and subsurface soils, indicating that leaching from surface soils is a possible contaminant transport mechanism at the Site. Although metals were detected in the soils, little migration of these contaminants to groundwater appears to be occurring. The constituents appear to be remaining in the soil.

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6.0 HUMAN HEALTH BASELINE RISK ASSESSMENT (HHBRA)

6.1 INTRODUCTION

6.1.1 Purpose

The purpose of this assessment is to evaluate baseline potential risks that might be experienced by human receptors coming into contact with contaminated soil, air, groundwater, surface water, sediment, fish tissue, and/or plant tissue contamination associated with the Site. Due to the presence of waste piles in the southern half of the Site, the on-Site portion of this risk assessment is subdivided into the waste and non-waste areas of the Site for the risk evaluation. The off-Site portion of this risk assessment is subdivided into the individual properties that were sampled during the RI.

6.1.2 Organization

The baseline human health risk assessment followed procedures outlined in USEPA's *RAGS Volume 1: Human Health Evaluation Manual Parts A and D* (USEPA, 1989 and 2001) and other USEPA supplemental guidance documents referenced throughout the text.

The human health baseline risk assessment is organized into the following sections:

- Introduction (Section 6.1) - The first section states the purpose of the risk assessment and explains the report organization.
- Identification of COPCs (Section 6.2) - This section reviews analytical data collected at the Site and identifies media of concern and COPCs.
- Exposure Assessment (Section 6.3) - This section considers current and potential future land and water uses to identify possible receptor populations and potentially completed exposure pathways. Exposure point concentrations are estimated from available analytical data. Chemical dose to receptors is then quantified using standard intake calculations.
- Toxicity Assessment (Section 6.4) - General noncancer and cancer toxicities for COPCs are discussed and toxicity values for quantifying risks are presented in this section.
- Risk Characterization (Section 6.5) - The risk characterization section evaluates the possible nature and magnitude of health risks associated with the Site. Theoretical cancer risks and the likelihood of noncancer adverse health effects are quantified by combining calculated chemical dose with chemical toxicity information. The results are then compared to accepted levels of risk.

- Uncertainties inherent in the process are described in Section 6.6.
- Section 6.7 presents a summary of the baseline human health risk assessment results.

6.2 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

This section presents a brief summary of the historical and RI analytical data with respect to its applicability to the risk assessment. Relevant data are then used to identify media of potential concern and associated data sets. Lastly, the COPCs associated with each medium of concern are identified.

6.2.1 RI and Historical Data Evaluation

All data collected during the RI were considered appropriate for use in the risk assessment. Discussion of previous investigations and their results can be found in Section 1.2.3. A review of the historical data available for the Site was performed to determine whether it could be included in the risk assessment data sets. After a thorough evaluation of historical data, it was determined that no results of previous investigations were appropriate to add to the risk assessment data sets, with the exception of the fish tissue data. Since fish tissue was not sampled during the RI, the historical fish tissue data were included in the risk assessment.

6.2.2 Media of Potential Concern

In order to determine COPCs, it is necessary to establish potential media of concern. Sampling and analysis activities resulted in the detection of chemicals in surface and subsurface soils, air, groundwater, surface water, sediment, fish tissue, and plant tissue. Because chemicals in surface and shallow soil on-site can be directly contacted by workers, residents, and/or trespassers, exposure to surface and shallow soil could present potential human health concerns. Direct contact with subsurface soil could occur as the result of construction/utility activities. Given the potential for exposure, surface soil, shallow soil, and subsurface soil were retained as media of potential concern.

There are currently no restrictions on groundwater use at the Site; therefore, it is possible for groundwater to be used as a potable water source in the future. Groundwater at the Site varies in depth from four to 15 feet bgs. In areas with shallow groundwater, the groundwater may be directly contacted by construction workers. Therefore, groundwater is considered a medium of potential concern.

Arsenic and lead were detected in outdoor air, indicating that Site-related constituents have the potential to impact air as metal dust and be blown across the Site in the prevailing wind direction. A further discussion of Site wind directions can be found in the meteorology discussion in Section 3.2. Therefore, air was retained as a medium of potential concern.

Surface water samples from surface water bodies in the waste and non-waste areas of the Site exhibited detections of site-related constituents. These water bodies may be directly contacted by residents, trespassers, and workers. Sediment samples from these water bodies also displayed chemical detections, and could be directly contacted by residents, trespassers, and workers. Therefore, both surface water and sediment were retained as media of potential concern.

Plant tissue samples collected in the waste area of the Site exhibited detections of chemicals. Wild growing produce could be ingested by trespassers, while homegrown produce could be ingested by residents. Therefore, plant tissue was retained as a medium of potential concern.

Shallow soil samples collected off-site exhibited detections of chemicals. Because chemicals in surface and shallow soil off-site can be directly contacted by residents, exposure to shallow soil could present potential human health concerns. Given the potential for exposure, offsite shallow soil was retained as a media of potential concern.

Surface water samples from off-site surface water bodies exhibited detections of chemicals. These water bodies may be directly contacted by residents and/or trespassers. Sediment from these water bodies also displayed chemical detections, and could be directly contacted by residents and/or trespassers. Therefore, both off-site surface water and sediment were retained as media of potential concern.

Plant tissue samples collected at [REDACTED] (b) (6) [REDACTED] off-site exhibited detections of zinc. Homegrown produce could be ingested by residents. Therefore, off-site plant tissue was retained as a medium of potential concern.

Fish tissue samples collected from the strip mine pit exhibited detections of zinc. Fish may be caught and consumed by adult recreationists. This would result in the ingestion of contaminated fish tissue. Therefore, fish tissue was retained as a media of potential concern.

6.2.3 Identification of COPCs

COPCs include those Site-related chemicals that have the potential to impact human health, and were identified separately for each of the data sets compiled for this risk assessment.

On-Site

The non-waste and waste area shallow soil data sets include those samples that were collected from 0 – 2 feet bgs, while the non-waste and waste area comprehensive soil data sets include all soil samples that were collected from a depth of less than 12 feet. The on-site groundwater data set includes the analytical

results from groundwater monitoring events occurring in September 2005, May 2006, and September 2006. The air data set includes outdoor air samples collected in August 2005. The surface water and sediment data sets include all samples collected in July 2005 and May 2006. The washed and unwashed produce data sets include all plant tissue samples collected in June 2005 and July 2006.

Off-Site

The off-site shallow soil data sets include those samples that were collected from 0 – 1 feet bgs from each off-site property. The off-site groundwater data set includes the analytical results from Monitoring Well MW-6 during groundwater monitoring events occurring in September 2005, May 2006, and September 2006. The surface water and sediment data sets include all samples collected in May 2006 and September 2006. The washed and unwashed produce data set includes all plant tissue samples collected in June 2005 and July 2006. The fish tissue data set includes all samples collected in May 1999.

For this risk assessment, all chemicals that were positively detected in at least one sample from a given data set were initially considered COPCs. The COPC list was then reduced through a comparison to human health-based screening levels. The primary source of screening levels was the USEPA Region 6 *Human Health Medium-Specific Screening Levels* table (USEPA, 2007a). Screening levels for fish tissue were taken from the USEPA Region 3 *Risk Based Concentrations* (RBC) table (USEPA, 2005). Additionally, constituents for which no toxicity data are available were retained in the HHBRA.

Detailed tables showing the COPC screening process are provided in Tables 2.1 through 2.83 of Appendix N. A summary of the results of the COPC selection is shown on Table 6-1. Those data sets where COPCs were not identified were removed from the risk assessment. Table 6-2 shows the data sets that were carried through the risk assessment.

6.3 EXPOSURE ASSESSMENT

In the exposure assessment, potentially exposed populations and potential pathways of exposure are identified. The assessment considers physical Site features, land use, and zoning in order to identify pathways and populations for exposure. Only completed exposure pathways (i.e., human receptors in contact with contaminated media) may actually pose a human health risk.

Section 6.3.1 presents a description of the exposure setting and Section 6.3.2 discusses the likelihood for a human population to have direct contact with contaminated media. Section 6.3.3 identifies potentially completed exposure pathways and Section 6.3.4 presents the equations and variables used to quantify chemical intake.

6.3.1 Characterization of the Exposure Setting

The first step in evaluating exposure is to characterize a site with respect to its physical features, current and future land uses, and observed and predicted human activities so that potentially exposed populations at and near the Site can be identified.

6.3.1.1 Current and Future Land Use

The Site is located approximately 1-1/3 miles south of downtown Collinsville in Tulsa County, Oklahoma. Currently, the Site is vacant, and no firm development plans are in place. The Site is approximately 60 acres in total size, and is bounded by “Old” U.S. Highway 169 and the Atchison Topeka Santa Fe railroad tracks to the east, an impoundment (i.e., strip mine pit) to the south, and agricultural lots to the north and west. Additionally, the Faith Assembly Church property bounds the Site to the north.

Due to the proximity of the Site to residential, agricultural, and commercial/industrial properties, it could be developed in numerous ways in the future. The relatively flat terrain and preexisting road lend themselves to future residential or commercial/industrial land use. Any future development of the Site, whether it is residential or commercial, would likely result in construction activities, involving subsurface excavation and digging. Future changes in Site use could also result in exposed grass areas requiring maintenance.

6.3.1.2 Current and Future Water Use

As described in Section 3.6, Hydrogeology, no major bedrock or alluvial aquifers lie beneath the Site. The Seminole Formation, the upper bedrock aquifer beneath the Site, consists of shale, sandstone, and thin coal beds and has a thickness of approximately 200 ft. The Seminole Formation reportedly yields small amounts of fair to poor quality water and has been designated Class IIB as a minor use general basin (OAC, 2004b). There are no municipal or other public water wells or Wellhead Protection Areas within a 4-mile radius of the Site. A water well search identified several private wells located within a one-mile radius of the Site, including a residential well located on the Site, which is currently not in use. The identified wells varied in depth from 32 ft to 200 ft bgs and exhibited yields ranging from one to 40 gpm. No yield data was available from the on-site residential well.

As previously stated, the Site is vacant and not currently supplied with city water services. It is likely that future large-scale residential or commercial/industrial development of the Site would include the installation of municipal water lines for potable water supply. However, there are currently no restrictions against the installation of private water wells. Although unlikely, future residential

development of the Site could lead to the installation of private wells and the use of groundwater as a potable water source.

6.3.2 Potentially Exposed Populations

Potentially exposed populations are those persons whose locations and activities create an opportunity for contact with COPCs. The following sections discuss potentially exposed populations, as they are influenced by the land and water uses just described.

On-Site

The Site is currently vacant, although access is limited by fencing. There are no firm development plans in place; therefore, it was assumed for purposes of this assessment that the Site could be developed for either commercial/industrial or residential use. Should a residence be built on the Site, both adults and children could occupy any given household. Therefore, adult and child residents were considered potentially exposed future populations.

Although the Site is fenced, it is possible for trespassers to circumvent the fence and enter the Site. The waste area is generally covered in slag piles and contains multiple ponds which could entice trespassers to the Site. Since the property is vacant and well vegetated, and residential properties are nearby, it can reasonably be expected that the Site might attract trespassers. However, it is unlikely that small children (i.e., under the age of six) would be allowed to spend a significant amount of time away from the home without adult supervision. Additionally, the fence would limit the ability for younger children to access the Site. Therefore, it was assumed that there was a potentially exposed trespasser population consisting of older youths/young teenagers from nine to 15 years old. Adults are considered less sensitive to chemical exposure than youths and less likely to have free time available for recreational activities; therefore, adult trespassers were not evaluated as a separate population.

Commercial and/or industrial businesses may be developed on the Site in the future. If the Site is developed for commercial/industrial use, the primary potentially exposed populations would be workers. Worker populations would likely include both full-time and part-time workers, as well as indoor and outdoor workers. Although indoor workers could be present, there are no volatile constituents at the Site that may migrate into building structures. Also, since soil ingestion for an outdoor worker would be more conservative in nature than an indoor worker, indoor workers were not evaluated in this risk assessment. The outdoor worker population was assumed to be engaged in groundskeeping/landscaping activities at the Site full-time only from mid-April through mid-October. The climate and growing season in Collinsville, Oklahoma generally limit year-round outdoor work.

Due to the undeveloped nature of the Site, extensive construction work would need to be performed in order to create residential and/or commercial properties. Utility installation would be required as part of Site development, and subsurface utilities, should they be installed in the future, would likely require occasional maintenance and repair. Both construction and utility installation/repair work involve subsurface excavation of soil; however, the duration of activity is likely to be much longer for construction work than for utility installation/repair work. Therefore, a single population of construction workers was evaluated as conservatively representative for both types of subsurface excavation activities.

In summary, populations reasonably expected to be present at the Site are: adult and child residents, youth trespassers, outdoor commercial/industrial workers, and construction/utility workers.

Off-Site

Properties off-Site are currently occupied primarily by residences. Properties that are not currently used as residences, such as the Faith Assembly Church, could be developed residentially in the future given the lack of land use restrictions. As such, off-Site land use in the future is expected to remain residential. Certain off-Site areas, such as the Strip Mine Pit and the area along the railroad tracks, are unlikely to be developed extensively in the future. The only likely potentially exposed populations in these areas are trespassers. As with the on-Site areas, it is unlikely that very young children would spend a significant amount of time away from home without adult supervision; therefore, the trespasser population was assumed to consist of youths/young teenagers ranging in age from 9 – 15 years. Although adults are also likely to be present, particularly in the Strip Mine Pit, youths are considered to be more sensitive to chemical exposure. Therefore, adult trespassers were not evaluated as a separate population.

In summary, populations reasonably expected to be present at off-Site locations are: adult and child residents, and youth trespassers.

6.3.3 Potential Exposure Pathways

Health risks may occur when there is contact with a chemical by a receptor population. Exposed populations must then either ingest, inhale, or dermally absorb COPCs to complete an exposure pathway and possibly experience a health risk. The following is a discussion of the likelihood of completed pathways. Table 6-3 summarizes the potentially exposed populations and pathways evaluated in the risk assessment.

6.3.3.1 Future On-Site Waste Area Residential Scenarios

Since unpaved areas would exist around residential building structures, direct contact with shallow soil (0-2 feet bgs) in the waste area was evaluated for adult and child residents. Direct contact with shallow soil in the waste area could lead to incidental ingestion of and chemical absorption through dermal contact. The ingestion of homegrown produce cultivated in contaminated shallow soil in the waste area was evaluated for both adults and children. It is unlikely that residents would be engaged in subsurface excavation; therefore, it was assumed that residents would not directly contact subsurface soil in the waste area. Given the presence of potentially Site-related constituents in outdoor air, inhalation of outdoor air was considered a potentially completed pathway. Should shallow groundwater be used as a potable water source, ingestion of groundwater as drinking water and absorption of chemicals through dermal contact with groundwater would be potentially completed exposure pathways.

The surface water bodies located in or near the waste area include Ponds 1, 2, 3, and the Mid-Site Ravine. Residents in the waste area could directly contact these water bodies while engaged in recreational activities, which could lead to incidental ingestion of chemicals in surface water and absorption of chemicals through dermal contact with surface water. Incidental ingestion and dermal contact with sediment from these water bodies may also take place during recreational activities.

In summary, the potentially completed exposure pathways for the waste area adult and child residents are:

- Incidental ingestion of shallow soil in the waste area,
- Absorption through dermal contact with shallow soil in the waste area,
- Ingestion of homegrown produce,
- Inhalation of outdoor air,
- Ingestion of groundwater,
- Absorption through dermal contact with groundwater,
- Incidental ingestion of surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Incidental ingestion of sediment from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with sediment from Ponds 1, 2, 3 and the Mid-Site Ravine

6.3.3.2 Future On-Site Non-Waste Area Residential Scenarios

Since unpaved areas would exist around residential building structures, direct contact with shallow soil (0-2 feet bgs) in the non-waste area was evaluated for adult and child residents. Direct contact with shallow soil in the non-waste area could lead to incidental ingestion and chemical absorption through

dermal contact. It is unlikely that residents would be engaged in subsurface excavation; therefore, it was assumed that residents would not directly contact subsurface soil in the non-waste area. Given the presence of potentially Site-related constituents in outdoor air, inhalation of outdoor air was considered a potentially completed pathway. Should shallow groundwater be used as a potable water source, ingestion of groundwater as drinking water and absorption of chemicals through dermal contact with groundwater would be potentially completed exposure pathways.

The surface water bodies located in or near the non-waste area include Ponds 4 and 5. Residents in the non-waste area could directly contact these water bodies, which could lead to incidental ingestion of chemicals in surface water and absorption of chemicals through dermal contact with surface water. Incidental ingestion and dermal contact with sediment from Pond 4 may also take place during recreational activities. No COPCs were identified in sediment from Pond 5; therefore, it is not included in the quantitative risk evaluation.

In summary, the potentially completed exposure pathways for the non-waste area adult and child residents are:

- Incidental ingestion of shallow soil in the non-waste area,
- Absorption through dermal contact with shallow soil in the non-waste area,
- Inhalation of outdoor air,
- Ingestion of groundwater,
- Absorption through dermal contact with groundwater,
- Incidental ingestion of surface water from Ponds 4 and 5,
- Absorption through dermal contact with surface water from Ponds 4 and 5,
- Incidental ingestion of sediment from Pond 4,
- Absorption through dermal contact with sediment from Pond 4

6.3.3.3 Future On-Site Waste Area Outdoor Commercial/Industrial Worker Scenario

The future on-site waste area outdoor commercial/industrial worker population was assumed to consist of groundskeepers engaged in light landscaping and grounds maintenance activities. In this role, an outdoor commercial/industrial worker could directly contact contaminated shallow soil (0-2 feet bgs) in the waste area. Since most common groundskeeping/landscaping activities would not include subsurface excavation, it was assumed that outdoor commercial/industrial workers would not directly contact subsurface soil in the waste area. Direct contact with shallow soil in the waste area could lead to

incidental ingestion and chemical absorption through dermal contact. Given the presence of potentially Site-related constituents in outdoor air, inhalation of outdoor air was considered a potentially completed pathway. Outdoor commercial/industrial workers could come into contact with surface water and sediment while working along the periphery of the Ponds 1, 2, and 3 and the Mid-Site Ravine. Therefore, incidental ingestion and chemical absorption through dermal contact with surface water and sediment were considered potentially completed exposure pathways.

In summary, the potentially completed exposure pathways for the waste area outdoor commercial/industrial worker are:

- Incidental ingestion of shallow soil in the waste area,
- Absorption through dermal contact with shallow soil in the waste area,
- Inhalation of outdoor air,
- Incidental ingestion of surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Incidental ingestion of sediment from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with sediment from Ponds 1, 2, 3 and the Mid-Site Ravine

6.3.3.4 Future On-Site Non-Waste Area Outdoor Commercial/Industrial Worker Scenario

The future on-site non-waste area outdoor commercial/industrial worker population was assumed to consist of groundskeepers engaged in light landscaping and grounds maintenance activities. In this role, an outdoor commercial/industrial worker could directly contact contaminated shallow soil (0-2 feet bgs) in the non-waste area. Since most common groundskeeping/landscaping activities would not include subsurface excavation, it was assumed that outdoor commercial/industrial workers would not directly contact subsurface soil in the non-waste area. Direct contact with shallow soil in the non-waste area could lead to incidental ingestion and chemical absorption through dermal contact. Given the presence of potentially Site-related constituents in outdoor air, inhalation of outdoor air was considered a potentially completed pathway. Outdoor commercial/industrial workers could come into contact with surface water and sediment while working along the periphery of the Ponds 4 and 5. Therefore, incidental ingestion and chemical absorption through dermal contact with surface water and sediment were considered potentially completed exposure pathways.

In summary, the potentially completed exposure pathways for the non-waste area outdoor commercial/industrial worker are:

- Incidental ingestion of shallow soil in the non-waste area,
- Absorption through dermal contact with shallow soil in the non-waste area,
- Inhalation of outdoor air,
- Incidental ingestion of surface water from Ponds 4 and 5,
- Absorption through dermal contact with surface water from Ponds 4 and 5,
- Incidental ingestion of sediment from Pond 4,
- Absorption through dermal contact with sediment from Pond 4

6.3.3.5 Future On-Site Waste Area Construction/Utility Worker Scenario

Because construction activities usually involve the excavation of soil, construction workers could directly contact contaminated surface and subsurface soils in the waste area. Direct contact with soil in the waste area could lead to incidental ingestion and chemical absorption through dermal contact. Excavation activities could disturb soils in the waste area, thus generating fugitive dusts from contaminated soils that could be inhaled. During excavation activities, shallow areas of groundwater could pool in an excavation trench. This could result in chemical absorption through dermal contact with pooled groundwater. An on-site cistern with standing water, present in the waste area, had detections of inorganic constituents. A construction or utility repair worker could be exposed to these chemicals by absorption through dermal contact with surface water from the on-site cistern. No sediment could be collected from the cistern; therefore, exposure to sediment in the cistern was not evaluated.

In summary, the potentially completed exposure pathways for the waste area construction/utility worker are:

- Incidental ingestion of soil in the waste area,
- Absorption through dermal contact with soil in the waste area,
- Inhalation of fugitive dusts from soil in the waste area,
- Absorption through dermal contact with pooled groundwater in an excavation,
- Absorption through dermal contact with surface water in the on-site cistern

6.3.3.6 Future On-Site Non-Waste Area Construction/Utility Worker Scenario

Because construction activities usually involve the excavation of soil, construction workers could directly contact contaminated surface and subsurface soils in the non-waste area. Direct contact with soil in the non-waste area could lead to incidental ingestion and chemical absorption through dermal contact. Excavation activities could disturb soils in the non-waste area, thus generating fugitive dusts from contaminated soils that could be inhaled. During excavation activities, shallow areas of groundwater

could pool in an excavation trench. This could result in chemical absorption through dermal contact with pooled groundwater.

In summary, the potentially completed exposure pathways for the non-waste area construction/utility worker are:

- Incidental ingestion of soil in the non-waste area,
- Absorption through dermal contact with soil in the non-waste area,
- Inhalation of fugitive dusts from soil in the non-waste area,
- Absorption through dermal contact with pooled groundwater in an excavation

6.3.3.7 Current and Future On-Site Waste Area Youth Trespasser Scenario

Youth trespassers could directly contact contaminated shallow soils (0-2.0 feet bgs) in the waste area. Direct contact with shallow soil in the waste area could lead to incidental ingestion and chemical absorption through dermal contact. Youth trespassers could ingest wild produce growing in contaminated shallow soil in the waste area at the Site. It is unlikely that trespassers would be engaged in subsurface excavation; therefore, it was assumed that youth trespassers would not directly contact subsurface soil in the waste area. Given the presence of potentially Site-related constituents in outdoor air, inhalation of outdoor air was considered a potentially completed pathway.

The surface water bodies located in or near the waste area include Ponds 1, 2, 3, and the Mid-Site Ravine. Contaminated water and sediment could be incidentally ingested and/or dermally contacted during activities in the surface water bodies.

In summary, the potentially completed exposure pathways for the waste area youth trespasser are:

- Incidental ingestion of shallow soil in the waste area,
- Absorption through dermal contact with shallow soil in the waste area,
- Ingestion of wild produce,
- Inhalation of outdoor air,
- Incidental ingestion of surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with surface water from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Incidental ingestion of sediment from Ponds 1, 2, 3 and the Mid-Site Ravine,
- Absorption through dermal contact with sediment from Ponds 1, 2, 3 and the Mid-Site Ravine

It should be noted that the waste area of the Site is far more appealing for trespassing purposes than the non-waste area to the presence of more and larger water bodies. Additionally, the waste area is well forested whereas the non-waste area is largely covered with scrub grass. Given that the waste area is more appealing, it was assumed that on-Site trespassers would preferentially spend their time in the waste area. Therefore, potential trespassers in the non-waste area were not evaluated.

6.3.3.8 Current and Future Off-Site Youth Trespasser Scenario

Youth trespassers could directly contact contaminated off-Site shallow soils (0-2.0 feet bgs). Direct contact with off-Site shallow soil near the rail tracks could lead to incidental ingestion and chemical absorption through dermal contact. It is unlikely that trespassers would be engaged in subsurface excavation; therefore, it was assumed that youth trespassers would not directly contact off-Site subsurface soil near the rail tracks. Trespasser activities could disturb off-Site soils near the rail tracks, thus generating fugitive dusts from contaminated soils that could be inhaled.

Surface water is present in ditches along the rail tracks. Contaminated water and sediment could be incidentally ingested and/or dermally contacted during activities in the ditches along the rail tracks.

In summary, the potentially completed exposure pathways for the off-Site youth trespasser are:

- Incidental ingestion of off-Site shallow soil near the rail tracks,
- Absorption through dermal contact with off-Site shallow soil near the rail tracks,
- Inhalation of fugitive dusts from off-Site shallow soil near the rail tracks,
- Incidental ingestion of surface water from ditches along the rail tracks,
- Absorption through dermal contact with surface water from ditches along the rail tracks,
- Incidental ingestion of sediment from ditches along the rail tracks,
- Absorption through dermal contact with sediment from ditches along the rail tracks

6.3.3.9 Current and Future Off-Site Recreationist at Strip Mine Pit Scenario

Recreationists could directly contact sediment in the off-Site strip mine pit. Direct contact with sediment from the strip mine pit could lead to incidental ingestion and absorption through dermal contact. No COPCs were identified in surface water samples from the strip mine pit; therefore, exposure to surface water was not evaluated. In addition, the strip mine pit supports a fish population; however no COPCs were identified in the available fish tissue data. Although recreationists could catch and eat fish from the strip mine pit, ingestion of fish tissue was not considered a potentially completed exposure pathway due to the lack of COPCs.

In summary, the potentially completed exposure pathways for the off-site recreationist at the strip mine pit are:

- Incidental ingestion of sediment from the strip mine pit,
- Absorption through dermal contact with sediment from the strip mine pit,

6.3.3.10 Current and Future Off-Site Residential Properties

Since unpaved areas exist around residential building structures, direct contact with off-Site shallow soil (0-2 feet bgs) was evaluated for adult and child residents. Direct contact with off-Site shallow soil could lead to incidental ingestion of and chemical absorption through dermal contact. It is unlikely that residents would be engaged in subsurface excavation; therefore, it was assumed that residents would not directly contact off-Site subsurface soil. Resident activities could disturb off-Site shallow soils, thus generating fugitive dusts from contaminated soils that could be inhaled.

In addition, residents at [REDACTED] (b) (6) could ingest produce that was observed to be growing at this location. A farm pond is present at [REDACTED] (b) (6). Residents at this location may directly contact sediment through incidental ingestion and chemical absorption through dermal contact. No COPCs were identified in surface water samples from the farm pond; therefore, exposure to surface water at [REDACTED] (b) (6) was not included in this evaluation. Surface water is present at [REDACTED] (b) (6) in ditches along 169 highway and an intermittent ditch.

Contaminated water and sediment could be incidentally ingested and/or dermally contacted during activities in the ditches along 169 Highway and the intermittent ditch.

In summary, the potentially completed exposure pathways for the off-Site adult and child residents are:

- Incidental ingestion of off-Site shallow soil,
- Absorption through dermal contact with off-Site shallow soil,
- Inhalation of fugitive dusts from off-Site soil,
- Ingestion of homegrown produce at [REDACTED] (b) (6),
- Incidental ingestion of sediment from the farm pond at [REDACTED] (b) (6),
- Incidental ingestion of surface water from ditches along 169 highway and the intermittent ditch at [REDACTED] (b) (6),
- Absorption through dermal contact with surface water from ditches along 169 highway and the intermittent ditch at [REDACTED] (b) (6),
- Incidental ingestion of sediment from ditches along 169 highway and the intermittent ditch at [REDACTED] (b) (6),

- Absorption through dermal contact with sediment from ditches along 169 highway and the intermittent ditch at (b) (6)

6.3.4 Estimation of Intake

This section of the risk assessment presents the calculation of chemical intake through the exposure pathways identified in Section 6.3.3. Chemical intake is expressed in mg/kg/day. Intakes for all COPCs were quantified using Site-specific exposure point concentrations in conjunction with pathway-specific equations taken from USEPA guidance. The selection of exposure point concentrations is presented in Tables 3.1 through 3.55 of Appendix N. The pathway-specific equations and exposure variables are presented in Tables 4-1 through 4-12 in Appendix N. The exposure and chemical variables used in these equations are discussed in the following sections. The calculated chemical intakes are later used in conjunction with toxicity values to characterize risk, as discussed in Section 6.5, Risk Characterization.

6.3.4.1 Chemical Variables

6.3.4.1.1 Data Selection

Analytical data were evaluated for use in the quantitative risk assessment in accordance with the data evaluation procedures outlined in RAGS (USEPA, 1989). As stated in RAGS, data qualified as rejected (R) were not used in the risk assessment. All other data were considered valid and were considered in the risk assessment. For duplicate sample results, the most appropriate data point for use in the risk assessment was identified using the following guidelines:

- If both analytical results were nondetect, then the lowest nondetect result was carried forward in the risk assessment and used at one-half the stated reporting limit. In other words, a constituent reported as not detected at a reporting limit of 10 mg/kg would be assumed to be present in the analyzed medium at a concentration of 5 mg/kg and that value would be used in the exposure calculations.
- If both analytical results were detections, then the highest concentration was carried forward in the risk assessment with the exception of results that exceeded instrumentation calibration limits. In the case of over-calibration results, the reanalyzed result (i.e., the result within calibration limits) was used.
- If the data group contained both detect and nondetect results, then the detect result was carried forward and used.

6.3.4.1.2 Exposure Concentrations

Current USEPA risk assessment guidance specifies that the reasonable maximum exposure (RME) for a receptor population be calculated using the 95 percent UCL of the arithmetic mean of chemical concentrations. However, for on-site surface water, sediment, air, and produce data, as well as many off-site properties, the number of available samples was insufficient to calculate a valid 95 percent UCL. Given the small number of samples for these media, the maximum detected concentration in any given data set from these media was used as the exposure concentration. UCL values were also not calculated for groundwater. Groundwater is considered a potential source of potable water in the future, and such a use would require the installation of an extraction well. Because groundwater would be extracted from a single location, the use of a 95 percent UCL based on data from multiple dispersed monitoring wells would not be appropriate. Therefore, the maximum detected concentrations were used as exposure concentrations for constituents in groundwater.

UCLs were calculated using USEPA's ProUCL software Version 3.00.02. The program's statistical output for each compound in each data set is provided in Appendix O. It should be noted that some of the UCL calculations resulted in 95 percent UCLs that were higher than the maximum detected concentration. In such instances, the maximum detected concentration is used instead.

Table 6-4 summarizes the exposure concentrations for on-site and off-site data sets. Detailed information regarding the identification of exposure concentrations is available in Tables 3.1 through 3.55 in Appendix N.

6.3.4.1.3 Dermal Absorption

Recommended absorption factors for dermal absorption of metals from soil and sediment were obtained from the most recent USEPA guidance (USEPA, 2004c). With the exception of arsenic and cadmium, current guidance does not provide absorption values for metals since the degree of absorption of metals is directly related to speciation and too little data are available to extract a reasonable default value. In the absence of a default absorption factor for metals, zero absorption was assumed if a chemical-specific value was not available. Absorption values of 0.03 and 0.001 were used for arsenic and cadmium, respectively (USEPA, 2004c).

When evaluating dermal absorption of chemicals from groundwater and surface water, chemical-specific permeability constants were used (USEPA, 2004c). Permeability constants were available in the most recent USEPA guidance for each of the COPCs evaluated in groundwater and surface water. Absorption values of 0.001 (arsenic), 0.001 (cadmium), 0.0001 (lead), and 0.0006 (zinc) were used.

6.3.4.1.4 Particulate Emission Factor (PEF)

Daily wind dispersion can result in the generation of fugitive dust, which produces a potential chemical exposure for off-Site residents and trespassers (inhalation of dust for on-Site receptors was evaluated using air data). To evaluate exposure through inhalation of dust by off-Site residents and trespassers, a default PEF value of $1.316\text{E}+09$ cubic meters per kilogram (m^3/kg) (USEPA, 2002) was used.

Excavation activities typically associated with construction work can produce levels of airborne dust beyond what are typically generated through day-to-day wind dispersion. This increased dust generation produces a potential chemical exposure situation for a future construction/utility worker that can not be appropriately assessed using the existing air data or the default PEF value. To evaluate construction worker exposure through inhalation of dust, the default PEF from the USEPA Region 6 *Human Health Medium-Specific Screening Levels* (USEPA, 2007a) was adjusted by a factor of 100. This adjustment factor was derived by comparing the default value provided in the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA, 2002) with the example calculation of a PEF value for a construction scenario provided in the same guidance document. Calculating a Site-specific PEF for the construction scenario was determined to be impractical since the information needed to establish most of the variable values is currently unavailable. For the construction/utility worker scenario, it was assumed that 100 percent of the dust in the air was derived from contaminated soil.

6.3.4.2 Exposure Variables

Recommended exposure variable values from guidance documents were used and referenced, if available. If not, best professional judgment about expected Site conditions was employed to estimate values for the exposure scenarios. The recommended values and estimated values were specifically chosen to result in a RME estimate. An RME represents a high-end exposure situation, but one still within the realm of possible exposures. Values used for each pathway for all receptors characterized are shown on the pathway-specific intake tables (see Appendix N, Tables 4-1 through 4-13) and discussed in the following subsections.

Future On-Site Waste and Non-Waste Area Resident Exposure Variables

The combined child-adult resident population scenario, spanning a 30-year period and including six years as a child and 24 years as an adult, was used to assess exposure to carcinogenic compounds. The focus is on individuals who may live in the same residence for a high-end period of time (e.g., 30 years). The childhood period is specifically included so as to incorporate the relatively higher exposures of children into the lifetime average daily dose (USEPA, 1996). Exposure to noncarcinogens was assessed separately

for adults and children in order to not underestimate possible hazards to children. Again, this is because children may have a higher chemical intake in relation to body weight than adults.

Future adult residents were assumed to weigh 70 kilograms (kg) (USEPA, 1989). Since weight and body surface are directly related, the use of mean weight requires use of mean surface area. In evaluating intake through dermal absorption from soil and sediment, 5,700 square centimeters (cm²) was used as the area of exposed skin based upon the mean values for head, hands, forearms, lower legs, and feet (USEPA, 2004c). This exposure area was conservatively assumed for both winter and summer conditions. For exposure to soil, the recommended default soil-to-skin adherence factor of 0.07 milligrams per square centimeter (mg/cm²) for adults was assumed (USEPA, 2004c). Since sediment is likely to have a higher water content than soil, a higher level of soil-to-skin adherence can reasonably be assumed. A soil-to-skin adherence factor of 0.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for residential adult gardeners (USEPA, 2004c), was used for sediment exposures.

Dermal contact with groundwater is expected to occur primarily during showering, which is considered a whole-body exposure. Dermal contact with surface water is expected to occur while swimming, which is also considered a whole-body exposure. Therefore, in evaluating intake through dermal absorption from groundwater and surface water, skin surface area was assumed to equal 18,000 cm², based on the 50th percentile value for adult males and females (USEPA, 2004c).

For the inhalation intake calculations, it was assumed that an adult resident breathes 0.633 cubic meters per hour (m³/hr) (USEPA, 1997a), based on the average long-term inhalation rate for adult males, for 24 hours per day.

The recommended default adult soil ingestion rate of 100 milligrams per day (mg/day) (USEPA, 2002) was used to estimate intake through incidental ingestion of soil and sediment. The fraction of soil ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent). For the ingestion of homegrown produce, it was assumed that an adult resident ingests 0.0003 kilograms of produce per kilogram body weight per day (kg/kg-day) (USEPA, 1998). The fraction of consumed produce that is from a contaminated source was assumed to equal the recommended default of 0.25 (25 percent) (USEPA, 1998). The recommended default groundwater ingestion rate of 2 liters per day (L/day) (USEPA, 1989) was used to estimate intake through ingestion of groundwater.

For the ingestion intake calculations for surface water the default ingestion rate of 0.05 liters per hour (L/hr) (USEPA, 1989) was used. The exposure time was assumed to equal 4 hours per recreational event based on the average time spent outdoors at a pool/river/lake (USEPA, 1997a). For the exposure

frequency, it was conservatively assumed that an adult would visit a surface water body 72 times per year (2-3 times per week from April to September), due to the seasonality of the Site. This time is assumed to be equally divided among the water bodies in the waste and non-waste area. In other words, in the waste area residents are assumed to spend 18 days at each of the waste area water bodies, while non-waste area residents are assumed to spend 36 days at each of the non-waste area water bodies.

It was assumed that adults and children spend 350 days per year at home (USEPA, 1991). In accordance with procedures defined in RAGS, an adult exposure duration of 24 years and a childhood exposure duration of six years were assumed for separate noncancer risk calculations. An exposure duration of 30 years was used for combined cancer risk calculations. The cumulative 30-year exposure duration used for the cancer risk calculations assumes that a person resides at the Site for a total of 30 years, six as a child and 24 of which are evaluated as an adult.

Future child residents were assumed to weigh 15 kg, the recommended default body weight for children from infancy to six years of age (USEPA, 1989). As previously discussed, use of mean weight requires use of mean surface area. In evaluating intake through dermal absorption from soil and sediment, 2,800 cm² was used as the area of exposed skin, based upon the mean values for head, hands, forearms, lower legs, and feet (USEPA, 2004c). This exposure area was conservatively assumed for both winter and summer conditions. For exposure to soil, the recommended default soil-to-skin adherence factor of 0.2 mg/cm² for children 0-6 years old was assumed (USEPA, 2004c). A soil-to-skin adherence factor of 3.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for children playing in wet soil (USEPA, 2004c), was used for sediment exposures.

Dermal contact with groundwater is expected to occur primarily during bathing, which is considered a whole-body exposure. Dermal contact with surface water is expected to occur while swimming, which is also considered a whole-body exposure. Therefore, in evaluating intake through dermal absorption from groundwater and surface water, skin surface area was assumed to equal 6,600 cm², based on the 50th percentile value for male and female children 0-6 years of age (USEPA, 2004c).

For the inhalation intake calculations, it was assumed that a child resident breathes 0.272 m³/hr (USEPA, 1997a), based on the average inhalation rates for children 0-6 years old, for 24 hours per day.

The recommended default soil ingestion rate of 200 mg/day (USEPA, 1997a) was used to estimate intake through incidental ingestion of soil and sediment. The variable of fraction ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent). For the ingestion of homegrown produce, it was assumed that a child resident ingests 0.00042 kg/kg-day of produce (USEPA, 1998). The fraction of

produce that is consumed from a contaminated source was assumed to equal the recommended default value of 0.25 (25 percent) (USEPA, 1998). The recommended groundwater ingestion rate for children of 1 L/day (USEPA, 2004d) was used to estimate intake through ingestion of groundwater.

For the ingestion intake calculations for surface water the default ingestion rate of 0.05 L/hr (USEPA, 1989) was used. The exposure time was assumed to equal 4 hours per recreational event based on the average time spent outdoors at a pool/river/lake (USEPA, 1997a). For the exposure frequency, it was conservatively assumed that children would visit a surface water body 72 times per year (2-3 times per week from April to September). This time is assumed to be equally divided among the water bodies in the waste and non-waste area. In other words, in the waste area residents are assumed to spend 18 days at each of the waste area water bodies, while non-waste area residents are assumed to spend 36 days at each of the non-waste area water bodies.

Future On-Site Waste and Non-Waste Area Outdoor Commercial/Industrial Worker Exposure Variables

The outdoor commercial/industrial worker was assumed to weigh 70 kg, the recommended default adult body weight (USEPA, 1989). Use of mean weight requires use of mean surface area. In evaluating dermal exposure intake, 3,300 cm² was used as the total area of exposed skin based upon the adult mean values for forearms, hands, head, and feet (USEPA, 2004c). This value was used for evaluating exposures to soil, sediment, and surface water. The soil-to-skin adherence factor was assumed to be 0.2 mg/cm² (USEPA, 2004c). To account for a higher level of adherence that can reasonably be assumed for damp sediment, a soil-to-skin adherence factor of 0.9 mg/cm², which represents the 95th percentile weighted soil adherence factor for utility workers (USEPA, 2004c), was used for sediment exposures.

For the inhalation intake calculations, it was assumed that an outdoor commercial/industrial worker breathes 1.3 m³/hr (USEPA, 1997a) based on the hourly average inhalation rate for outdoor workers. The recommended default soil ingestion rate of 100 mg/day (USEPA, 2002) was used to estimate intake through incidental ingestion of soil. The variable of fraction ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent). For the ingestion intake calculations for surface water an ingestion rate of 0.0092 L/hr was used, based on a ratio of skin surface area to water ingestion rate for an adult resident.

The seasonality of the climate in Collinsville, Oklahoma tends to preclude year-round outdoor work. The outdoor commercial/industrial worker was assumed to be engaged in seasonal groundskeeping and landscaping activities, which are likely to take place from mid-April through mid-October. Therefore, the exposure frequency was assumed to equal 125 days per year, representing half of a working year.

Groundskeeping activities around the ponds were assumed to take place weekly during the 6-month working season (i.e., exposure time of 26 days per year), and it was assumed that the outdoor commercial/industrial worker would spend 2.5 hours around each pond. The outdoor commercial/industrial worker was assumed to be employed at the Site for 25 years, the standard worker exposure duration (USEPA, 1991). Outdoor commercial/industrial workers were assumed to spend 100 percent of their time outdoors. The exposure time for inhalation of outdoor air was set at eight hours per day.

Future On-Site Waste and Non-Waste Area Construction/Utility Worker Exposure Variables

Construction/utility workers were also assumed to weigh 70 kg, a mean adult weight requiring use of mean surface area. In evaluating the dermal absorption intake, 3,300 cm² was used as the total area of exposed skin based upon the mean values for forearms, hands, and head (USEPA, 1997a). This value was used for evaluating exposures to soil, sediment, and surface water. A soil-to-skin adherence factor of 0.3 mg/cm² was assumed (USEPA, 2004c). This value represents the 95th percentile weighted soil adherence factor for construction workers; therefore, it was also used for evaluating sediment exposures.

Excavation work typically involves some heavy physical labor, therefore the inhalation rate for the construction worker was assumed to be 2.5 m³/hr (USEPA, 1997a) based on a heavy activity level. A higher level of soil contact can reasonably be expected to occur during excavation activities; consequently, a higher soil ingestion rate than the normal adult default value was assumed for excavation workers. An incidental soil ingestion rate of 330 mg/day (USEPA, 2002) was used to estimate intake for construction/utility workers. It was conservatively assumed that 100 percent of the soil contacted by a construction worker was from a contaminated source.

Because of the size of the Site and the significant level of construction required to develop the Site further for either commercial/industrial or residential purposes, the construction/utility work was assumed to occur for 8 hours per day for 6 months (130 working days). Given the shallow depth to groundwater across the Site, it was assumed that construction workers would be exposed to pooled water in an excavation for 20 days of the total 6 months spent on Site. It is possible that construction or utility repair workers would have to spend some time working in or repairing the on-site cistern; however, it is unlikely that this would be required frequently or for extended periods of time. Therefore, it was assumed that a total of 5 working days could be spent in contact with surface water from the on-site cistern.

Current and Future On-Site Waste Area Youth Trespasser Exposure Variables

All youth trespassers were assumed to weigh 45.5 kg (USEPA, 1997a), the mean body weight of boys and girls from ages 9 to 15 years old. The use of mean weight requires use of mean surface area. In calculating dermal absorption of chemicals from soil and sediment, 7,085 cm² was used as the total area of exposed skin based upon the mean value for head, hands, forearms, lower legs, and feet (USEPA, 1997a). For soil exposures, the default childhood soil-to-skin adherence factor of 0.2 mg/cm² was conservatively assumed (USEPA, 2004c). To account for the higher level of adherence that can reasonably be assumed for damp sediment, a soil-to-skin adherence factor of 3.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for children playing in wet soil (USEPA, 2004c), was used for sediment exposures.

For the ingestion intake calculations for surface water, the default ingestion rate of 0.05 L/hr (USEPA, 1989) was used. Dermal contact with surface water is expected to occur while swimming, which is considered a whole-body exposure. Therefore, in evaluating intake through dermal absorption from surface water, skin surface area was assumed to equal 13,200 cm², based on the 50th percentile value for boys and girls from ages 9 to 15 years old (USEPA, 2004c). For the inhalation intake calculations for dust, it was assumed that a youth trespasser breathes 1.2 m³/hr (USEPA, 1997a), based on a moderate activity level for children.

Since youth trespassers are assumed to be older than the standard child populations described in the *Exposure Factors Handbook*, it can reasonably be assumed that deliberate soil ingestion is much less likely to occur. Therefore, the recommended mean soil ingestion rate for older children and adults of 100 mg/day (USEPA, 1997a) was used to estimate intake through incidental ingestion of soil and sediment. The variable of fraction ingested from a contaminated source was assumed to be 1.0 (100 percent). For the ingestion of unwashed produce, it was assumed that an older child's produce intake would more closely resemble an adult's; therefore the ingestion rate for unwashed produce was assumed to equal 0.0003 kg/kg-day (USEPA, 1998). Default values are not available for fraction of unwashed produce ingested from a contaminated source, so the recommended residential default value of 0.25 (25 percent) (USEPA, 1998) was used.

Similarly to residents, youth trespassers are likely to visit the Site only during the five warm months of the year. However, given that children aged 9-15 generally have more free time during the summer months than adults typically have, it was conservatively assumed that youth trespassers would spend 3-4 days per week for five months, or 72 days per year on the Site. This time is assumed to be equally divided among the water bodies in the waste area. In other words, in the waste area trespassers are assumed to spend 18 days at each of the waste area water bodies.

Trespassers were assumed to be present on the Site for a total of 6 hours per event based on the 50th percentile estimate of time spent at a park or golf course for the ages of 5 to 17 during the spring, summer, and fall (USEPA, 1997a). Of the six total hours spent on Site, four hours per event were assumed to be spent in and around one of the surface water bodies. This results in exposure times of six hours per day for the inhalation evaluation and four hours per day for the surface water and sediment evaluations. Based on the identified age range, the exposure duration was assumed to be six years.

Current and Future Off-Site Youth Trespasser Along Rail Tracks Exposure Variables

All youth trespassers were assumed to weigh 45.5 kg (USEPA, 1997a), the mean of boys and girls from ages 9 to 15 years old. The use of mean weight requires use of mean surface area. In calculating dermal absorption of chemicals from soil, surface water, and sediment, 7,085 cm² was used as the total area of exposed skin based upon the mean value for head, hands, forearms, lower legs, and feet (USEPA, 1997a). Given the shallow depth of water in the drainage ditches, exposure to surface water was assumed to occur through wading rather than swimming. For soil exposures, the default childhood soil-to-skin adherence factor of 0.2 mg/cm² was conservatively assumed (USEPA, 2004c). To account for a higher level of adherence that can reasonably be assumed for damp sediment, a soil-to-skin adherence factor of 3.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for children playing in wet soil (USEPA, 2004c), was used for sediment exposures.

For the ingestion intake calculations for surface water, the default ingestion rate of 0.05 L/hr (USEPA, 1989) was used. This is likely an overly conservative value given that the ditches are of insufficient depth for swimming. For the inhalation intake calculations for dust, it was assumed that a youth trespasser breathes 1.2 m³/hr (USEPA, 1997a), based on a moderate activity level for children.

Since youth trespassers are assumed to be older than the standard child populations described in the *Exposure Factors Handbook*, it can reasonably be assumed that deliberate soil ingestion is much less likely to occur. Therefore, the recommended mean soil ingestion rate for older children and adults of 100 mg/day (USEPA, 1997a) was used to estimate intake through incidental ingestion of soil and sediment. The variable of fraction ingested from a contaminated source was assumed to be 1.0 (100 percent).

Similarly to residents, youth trespassers are likely to visit the ditches along Highway 169 only during the five warm months of the year. However, given that children aged 9-15 generally have more free time during the summer months than adults typically have, it was conservatively assumed that youth trespassers would spend 3-4 days per week for five months, or 72 days per year in the ditches along Highway 169.

Trespassers were assumed to be present in the ditches along Highway 169 for a total of 6 hours per event based on the 50th percentile estimate of time spent at a park or golf course for the ages of 5 to 17 during the spring, summer, and fall (USEPA, 1997a). Of the six total hours spent in the ditches along Highway 169, four hours per event were assumed to be spent in and around the ditches along Highway 169. This results in exposure times of six hours per day for the inhalation evaluation and four hours per day for the surface water and sediment evaluations. Based on the identified age range, the exposure duration was assumed to be six years.

Current and Future Recreationist at the Strip Mine Pit Exposure Variables

Recreationists present at the strip mine pit were assumed to weigh 70 kg, a mean adult weight requiring use of mean surface area. The use of mean weight requires use of mean surface area. In calculating dermal absorption of chemicals from sediment, 7,085 cm² was used as the total area of exposed skin based upon the mean value for head, hands, forearms, lower legs, and feet (USEPA, 1997a). This exposure area was conservatively assumed for both winter and summer conditions. Since sediment is likely to have a higher water content than soil, a higher level of soil-to-skin adherence can reasonably be assumed. A soil-to-skin adherence factor of 0.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for residential adult gardeners (USEPA, 2004c), was used for sediment exposures.

The recommended default adult soil ingestion rate of 100 milligrams per day (mg/day) (USEPA, 2002) was used to estimate intake through incidental ingestion of sediment. The fraction of soil ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent).

The exposure duration for the recreationist at the strip mine pit was set at 24 years. This number represents a non-child duration which would be consistent with a resident fishing in the strip mine pit.

Current and Future Off-Site Resident Exposure Variables

The combined child-adult resident population scenario, spanning a 30-year period and including six years as a child and 24 years as an adult, was used to assess exposure to carcinogenic compounds. The focus is on individuals who may live in the same residence for a high-end period of time (e.g., 30 years). The childhood period is specifically included so as to incorporate the relatively higher exposures of children into the lifetime average daily dose (USEPA, 1996). Exposure to noncarcinogens was assessed separately for adults and children in order to not underestimate possible hazards to children. Again, this is because children may have a higher chemical intake in relation to body weight than adults.

Future adult residents were assumed to weigh 70 kilograms (kg) (USEPA, 1989). Since weight and body surface are directly related, the use of mean weight requires use of mean surface area. In evaluating intake through dermal absorption from soil, surface water, and sediment, 5,700 square centimeters (cm²) was used as the area of exposed skin based upon the mean values for head, hands, forearms, lower legs, and feet (USEPA, 2004c). This exposure area was conservatively assumed for both winter and summer conditions. For exposure to soil, the recommended default soil-to-skin adherence factor of 0.07 milligrams per square centimeter (mg/cm²) for adults was assumed (USEPA, 2004c). Since sediment is likely to have a higher water content than soil, a higher level of soil-to-skin adherence can reasonably be assumed. A soil-to-skin adherence factor of 0.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for residential adult gardeners (USEPA, 2004c), was used for sediment exposures.

For the inhalation intake calculations, it was assumed that an adult resident breathes 0.633 cubic meters per hour (m³/hr) (USEPA, 1997a), based on the average long-term inhalation rate for adult males, for 24 hours per day.

The recommended default adult soil ingestion rate of 100 milligrams per day (mg/day) (USEPA, 2002) was used to estimate intake through incidental ingestion of soil and sediment. The fraction of soil ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent).

For the ingestion of homegrown produce at (b) (6), it was assumed that an adult resident ingests 0.0003 kilograms of produce per kilogram body weight per day (kg/kg-day) (USEPA, 1998). The fraction of consumed produce that is from a contaminated source was assumed to equal the recommended default of 0.25 (25 percent) (USEPA, 1998).

For the ingestion intake calculations for surface water at (b) (6), the default ingestion rate of 0.05 liters per hour (L/hr) (USEPA, 1989) was used. This is likely overly conservative given the shallow depth of the drainage ditches at (b) (6). The exposure time was assumed to equal 4 hours per recreational event based on the average time spent outdoors at a pool/river/lake (USEPA, 1997a). For the exposure frequency, it was conservatively assumed that an adult would visit a surface water body 72 times per year (2-3 times per week from April to September). This time is assumed to be equally divided among the water bodies at (b) (6). In other words, a resident at (b) (6) was assumed to spend 36 days at each of the (b) (6) water bodies.

It was assumed that adults and children spend 350 days per year at home (USEPA, 1991). In accordance with procedures defined in RAGS, an adult exposure duration of 24 years and a childhood exposure

duration of six years were assumed for separate noncancer risk calculations. An exposure duration of 30 years was used for combined cancer risk calculations. The cumulative 30-year exposure duration used for the cancer risk calculations assumes that a person resides at the Site for a total of 30 years, six as a child and 24 of which are evaluated as an adult.

Future child residents were assumed to weigh 15 kg, the recommended default body weight for children from infancy to six years of age (USEPA, 1989). As previously discussed, use of mean weight requires use of mean surface area. In evaluating intake through dermal absorption from soil and sediment, 2,800 cm² was used as the area of exposed skin, based upon the mean values for head, hands, forearms, lower legs, and feet (USEPA, 2004c). This exposure area was conservatively assumed for both winter and summer conditions. For exposure to soil, the recommended default soil-to-skin adherence factor of 0.2 mg/cm² for children 0-6 years old was assumed (USEPA, 2004c). A soil-to-skin adherence factor of 3.3 mg/cm², which represents the 95th percentile weighted soil adherence factor for children playing in wet soil (USEPA, 2004c), was used for sediment exposures.

For the inhalation intake calculations for dust and chemical vapors, it was assumed that a child resident breathes 0.272 m³/hr (USEPA, 1997a), based on the average inhalation rates for children 0-6 years old, for 24 hours per day.

The recommended default soil ingestion rate of 200 mg/day (USEPA, 1997a) was used to estimate intake through incidental ingestion of soil and sediment. The variable of fraction ingested from a contaminated source was conservatively assumed to be 1.0 (100 percent).

For the ingestion of homegrown produce at (b) (6), it was assumed that a child resident ingests 0.00042 kg/kg-day of produce (USEPA, 1998). The fraction of produce that is consumed from a contaminated source was assumed to equal the recommended default value of 0.25 (25 percent) (USEPA, 1998).

For the ingestion intake calculations for surface water at (b) (6), the default ingestion rate of 0.05 L/hr (USEPA, 1989) was used. The exposure time was assumed to equal 4 hours per recreational event based on the average time spent outdoors at a pool/river/lake (USEPA, 1997a). For the exposure frequency, it was conservatively assumed that children would accompany their parents to a surface water body 72 times per year (2-3 times per week from April to September). This time is assumed to be equally divided among the water bodies at (b) (6). In other words, a resident at (b) (6) was assumed to spend 36 days at each of the (b) (6) water bodies.

6.4 TOXICITY ASSESSMENT

The toxicity of COPCs is evaluated for both carcinogenic potential and noncarcinogenic adverse health effects. Data regarding health effects are then used by various agencies to derive numerical toxicity values. The USEPA gathers toxicological information from a variety of sources including experimental animal studies, epidemiological investigations, and clinical human studies. Well-conducted epidemiological studies that show a positive correlation between an agent and a disease represent the most convincing evidence about human risk. At present, human data adequate to serve as the sole basis for the development of toxicity values are available for only a few chemicals. In most cases where there is insufficient direct human data, USEPA uses toxicity information developed from experiments conducted on non-human mammals such as rats, mice, dogs, or rabbits.

The primary source of toxicological information for this report was the USEPA sponsored *Integrated Risk Information System* (IRIS) (USEPA, 2007b). If toxicity values were not found in IRIS, the USEPA National Center for Environmental Assessment's *Provisional Peer-Reviewed Toxicity Values* (PPRTV) was consulted for provisional information. As a final source of information, the USEPA's *Health Effects Assessment Summary Tables* (HEAST) (USEPA, 1997b) were consulted.

The following sections detail information regarding both noncancer and cancer toxicity values.

6.4.1 Noncancer Toxicity Values

The Reference Dose (RfD) and Reference Concentration (RfC) are the toxicity values used in assessing noncancer health effects from oral and inhalation exposures, respectively. For noncancer health effects, the level of exposure below which no adverse health effects develop is termed the threshold level or threshold dose. RfDs and RfCs represent exposure levels that are well below the threshold. Each is an estimate of daily exposure to the general human population (including sensitive subpopulations) that is unlikely to pose an appreciable likelihood of adverse effects during a given term of exposure.

RfDs and/or RfCs are derived from experimental no observed adverse effect levels (NOAELs) or lowest observed adverse effect levels (LOAELs) by application of uncertainty factors (UFs) or modifying factors (MFs). UFs of 10 are used to protect sensitive subpopulations, to account for interspecies variability, and to account for data being obtained from subchronic rather than chronic studies. A UF of 10 is also used when the toxicity value is derived from a LOAEL rather than a NOAEL. MFs, usually a value of 10 or less, are applied for uncertainties not addressed by the UFs just listed.

RfD values are expressed as mg/kg/day, and RfC values are expressed as a chemical concentration in air in milligrams per cubic meter (mg/m³). For consistency with the inhalation intake dose units, RfC values were converted to inhalation RfD values, which are then expressed as mg/kg/day (USEPA, 1997b).

Table 6-5 summarizes available RfDs and reference sources. By convention, RfD values, as with all toxicity numbers and risk assessment calculations, are expressed in scientific notation. For example, the oral RfD for arsenic, 0.0003 mg/kg/day, is expressed as 3×10^{-4} mg/kg/day or 3E-04 mg/kg/day, as shown in the table. More detailed information regarding noncancer toxicity of the COPCs is available in Tables 5.1 and 5.2 of Appendix N.

No dermal toxicity values are currently available, necessitating the adaptation and use of oral toxicity values. Dermal toxicity, other than relatively short-term effects at the point of contact, generally occurs as a result of chemical absorption into the bloodstream. However, oral values are typically developed from laboratory animal studies and reflect an administered (in feed or water), rather than an absorbed (through the gastrointestinal tract) dose. The degree of gastrointestinal absorption varies between chemicals with some being readily absorbed and some being poorly absorbed. To reflect this, default gastrointestinal absorption efficiency factors are applied to the oral values if laboratory studies indicate less than 50 percent gastrointestinal absorption (USEPA, 2004c). Only the oral RfD for cadmium required modification for dermal toxicity.

6.4.2 Cancer Toxicity Values

The toxicity values used in assessing cancer risk are slope factors. A slope factor represents the 95 percent upper confidence limit on the probability that a carcinogen will cause cancer at a dose of one mg/kg/day over a lifetime. Unlike most noncancer health effects, carcinogenesis may not conform to the concept of a threshold dose. Mechanistic data indicate that in some instances even the smallest dose of a carcinogen can lead to a clinical state of disease. For this reason, it is not possible to determine a no-response dose, but rather it is necessary to relate a specific dose to the statistical probability of a carcinogenic response.

For carcinogenic effects, the substance is first assigned a weight-of-evidence classification and then a slope factor is calculated. To determine the weight-of-evidence classification, the available evidence is evaluated to determine the likelihood that the agent is a human carcinogen. In 1996, USEPA proposed revised guidelines for evaluating research evidence for carcinogens, including a more descriptive classification scheme.

The slope factor is developed from data on the potency of the agent as a carcinogen in experimental animals and/or humans. Slope factors are available in IRIS for many substances categorized by USEPA as A, B, or C carcinogens. Table 6-6 summarizes the available slope factors for the carcinogenic COPCs. Additional information regarding the carcinogenic COPCs is available on Tables 6.1 and 6.2 of Appendix N.

As with RfDs, slope factors are not available for dermal exposure. For dermal exposure, current guidance recommends that oral slope factors be adjusted to reflect gastrointestinal absorption efficiency only when the absorption efficiency is less than 50 percent (USEPA, 2004c). Only the oral slope factor for cadmium required modification for dermal toxicity.

6.4.3 Health Effects of Lead

Lead represents a special situation with regard to both its cancer and noncancer toxicities. Populations especially sensitive to lead include children and pregnant women. The toxic effects of lead involve several organ systems including the nervous, vascular, and renal systems with the critical, or most sensitive, effects involving the nervous system. In children, lead exposure has been shown to decrease intelligence (IQ) scores, slow growth, and cause hearing problems. Exposure of a pregnant woman to lead may cause premature birth, lower birth weight, and decreased mental ability in the infant. In adults, lead exposure may decrease reaction time and possibly memory. It has been shown to increase blood pressure in middle-aged men, but it is uncertain if it has the same effect in women. Exposure to high levels of lead can cause brain and kidney damage in children and adults. Lead is also classified as a carcinogen based on experimental studies in animals (ATSDR, 1998).

Lead is categorized as B2, a probable human carcinogen, but also produces neuropathic effects that do not appear to have a threshold. Therefore, any exposure to lead may have an associated risk. The pharmacokinetics of lead are, however, quite complex and depend on a number of factors, including age, gender, and nutritional status. In general, lead is poorly absorbed into the bloodstream, although absorption rates are significantly higher in children. Human toxicity has been historically evaluated in terms of blood lead levels rather than exposure levels. Risk from lead is addressed in Section 6.5.3.3 – Risk from Exposure to Lead.

To quantify the potential risk posed by exposure to chemicals through identified pathways, the intake of each chemical is combined mathematically with the appropriate toxicity value to estimate the likelihood of health risks. The following two sections define the general risk characterization process for evaluating noncancer and cancer risks. Risk characterization for each potentially exposed population then follows.

6.5 RISK CHARACTERIZATION

To quantify the potential risk posed by exposure to chemicals through identified pathways, the intake of each chemical is combined mathematically with the appropriate toxicity value to estimate the likelihood of health risks. The following two sections define the general risk characterization process for evaluating noncancer and cancer risks. Risk characterization for each potentially exposed population then follows.

6.5.1 General Noncancer Risk Discussion

To characterize the risk of noncancer effects, toxicity values for COPCs are used in conjunction with dose estimates from each exposure scenario to quantitatively estimate the potential for adverse health effects. Chemical-specific doses calculated for each exposure pathway are compared with the reference value, RfD, for that chemical. If the estimated dose does not exceed the reference value, then adverse noncancer health effects are not expected. The comparison of dose to reference value is expressed mathematically as a hazard quotient, which is the dose divided by the reference value:

$$\text{Hazard Quotient} = \text{Dose (mg/kg/day)} / \text{RfD (mg/kg/day)}$$

Hazard quotients for chemicals within a pathway are summed to give the pathway hazard index. Pathway hazard indices are then summed for a total exposure hazard index. This procedure is followed for each exposure scenario. The summation of chemical and pathway hazard indices is conservative and health-protective as it assumes that the toxic effects of multiple compounds have an additive impact. In instances where the cumulative hazard index exceeded one, the total hazard index was partitioned by target organ to provide an accurate estimate of total risk per target organ. If the hazard index for each target organ does not exceed one, then noncancer adverse health effects are not expected.

6.5.2 General Cancer Risk Discussion

Cancer risk is expressed as a probability of developing a carcinogenic response as a result of exposure to a given chemical. The estimated dose for each cancer-causing substance is multiplied by the corresponding slope factor to calculate risk. The expression is as follows:

$$\text{Risk} = \text{Dose (mg/kg/day)} \times \text{Slope Factor (mg/kg/day)}^{-1}$$

For simultaneous exposure to several carcinogens, the calculated risks are summed within each pathway and then for all pathways to yield total excess cancer risk posed by a site. This procedure is followed for each exposure scenario. This value represents the probability of developing a carcinogenic response that is solely attributable to exposure from the Site and is in excess of the general background risk. Based on National Cancer Institute (NCI) statistics (NCI, 1990), background risk may be considered 0.33 (3.3 x

10^{-1} or $3.3\text{E-}01$ in scientific notation), since approximately one in three people in the United States will develop some form of cancer during a lifetime.

Given the current assumption that any exposure to a carcinogen poses some risk, zero risk is not achievable in a practical sense. Therefore, ranges of risk have been developed by USEPA for use as remediation goals. To be protective of human health, USEPA believes that exposure to site-related carcinogens should be limited so as to result in an individual upper bound excess lifetime cancer risk level of one in 10,000 or less (FR, 1990). The risk range of one in 10,000 to one in a million is a commonly accepted remediation goal. In other words, an excess lifetime cancer risk greater than one in 10,000 would generally be considered unacceptably high, while risks within the range may be acceptable depending upon site use. Risks of one in a million or less are generally considered insignificant. The final target cancer risk level selected for any given Site is a risk management decision that will reflect multiple Site-specific factors.

6.5.3 Risk Characterization

Table 6-7 shows a summary of risk results for all populations and pathways considered in the HHBRA. Table 6-8 shows a summary of pathway specific risks that exceed the USEPA levels of concern for noncancer risk (hazard index of one) and cancer risk ($1\text{E-}04$ – one in 10,000). For more in-depth risk results, including intake and reference values, please refer to Tables 7.1 to 7.61, 9.1 to 9.61, and 10.1 to 10.61 in Appendix N.

6.5.3.1 On-Site Populations

Future Waste Area Adult Resident Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $3\text{E}+00$. The hazard index for dermal contact with chemicals in shallow soil was $3\text{E-}01$. Ingestion of washed produce resulted in a hazard index of $3\text{E-}02$.

The hazard index for inhalation of air was $0\text{E}+00$. Ingestion of groundwater resulted in a hazard index of $1\text{E}+01$. The hazard index for dermal contact with groundwater was $1\text{E}+00$.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	$1\text{E-}02$	$8\text{E-}02$
Pond 2	$7\text{E-}03$	$4\text{E-}02$

Pond 3	2E-04	4E-05
Mid-Site Ravine	6E-02	4E-01

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	2E-01	9E-02
Pond 2	4E-02	3E-02
Pond 3	3E-02	2E-02
Mid-Site Ravine	2E-01	1E-01

The total hazard index for all pathways combined was 2E+01. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Waste Area Child Resident Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 3E+01. The hazard index for dermal contact with chemicals in shallow soil was 2E+00. Ingestion of washed produce resulted in a hazard index of 4E-02.

The hazard index for inhalation of air was 0E+00. Ingestion of groundwater resulted in a hazard index of 3E+01. The hazard index for dermal contact with groundwater was 3E+00.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	5E-02	1E-01
Pond 2	3E-02	8E-02
Pond 3	8E-04	7E-05
Mid-Site Ravine	3E-01	6E-01

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	1E+00	2E+00

Pond 2	4E-01	7E-01
Pond 3	3E-01	5E-01
Mid-Site Ravine	2E+00	3E+00

The total hazard index for all pathways combined was 7E+01. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Waste Area Residential Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 1E-03. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 1E-04. The pathway cancer risk for exposure to chemicals through ingestion of washed produce was 5E-06.

The pathway cancer risk for exposure to chemicals through inhalation of air was 5E-06. The pathway cancer risk for exposure to chemicals through ingestion of groundwater was 4E-04. The pathway cancer risk for exposure to chemicals through dermal contact with groundwater was 2E-06.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 1	0E+00	0E+00
Pond 2	0E+00	0E+00
Pond 3	0E+00	0E+00
Mid-Site Ravine	0E+00	0E+00

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 1	2E-05	3E-05
Pond 2	1E-05	1E-05
Pond 3	8E-06	9E-06
Mid-Site Ravine	7E-05	8E-05

The total potential cancer risk for all pathways combined was $2\text{E-}03$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Future Non-Waste Area Adult Resident Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $6\text{E-}02$.

The hazard index for inhalation of air was $0\text{E+}00$. Ingestion of groundwater resulted in a hazard index of $1\text{E+}01$. The hazard index for dermal contact with groundwater was $1\text{E+}00$.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	$1\text{E-}02$	$7\text{E-}02$
Pond 5	$2\text{E-}04$	$5\text{E-}05$

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	$4\text{E-}02$	$3\text{E-}02$

No detected COPCs exceeded sediment screening levels in pond 5.

The total hazard index for all pathways combined was $1\text{E+}01$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Non-Waste Area Child Resident Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E+}00$. The hazard index for dermal contact with chemicals in shallow soil was $4\text{E-}01$.

The hazard index for inhalation of air was $0\text{E+}00$. Ingestion of groundwater resulted in a hazard index of $3\text{E+}01$. The hazard index for dermal contact with groundwater was $3\text{E+}00$.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	5E-02	1E-01
Pond 5	1E-03	9E-05

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	4E-01	6E-01

No detected COPCs exceeded sediment screening levels in pond 5.

The total hazard index for all pathways combined was 4E+01. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Non-Waste Area Residential Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 2E-04. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 2E-05.

The pathway cancer risk for exposure to chemicals through inhalation of air was 4E-06. The pathway cancer risk for exposure to chemicals through ingestion of groundwater was 4E-04. The pathway cancer risk for exposure to chemicals through dermal contact with groundwater was 2E-06.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 4	0E+00	0E+00

No carcinogenic COPCs were detected in surface water samples from Pond 5.

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 4	1E-05	2E-05

No detected COPCs exceeded sediment screening levels in pond 5.

The total potential cancer risk for all pathways combined was 6E-04, which is above the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Future Waste Area Outdoor Commercial/Industrial Worker Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E+00. The hazard index for dermal contact with chemicals in shallow soil was 2E-01. The hazard index for inhalation of air was 0E+00.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	2E-03	1E-02
Pond 2	1E-03	7E-03
Pond 3	3E-05	6E-06
Mid-Site Ravine	9E-03	6E-02

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	2E-01	2E-01
Pond 2	6E-02	7E-02
Pond 3	5E-02	5E-02
Mid-Site Ravine	3E-01	3E-01

The total hazard index for all pathways combined was 3E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Waste Area Outdoor Commercial/Industrial Worker Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 1E-04. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 3E-05. The pathway cancer risk for exposure to chemicals through inhalation of air was 8E-07.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 1	0E+00	0E+00
Pond 2	0E+00	0E+00
Mid-Site Ravine	0E+00	0E+00

No carcinogenic COPCs were detected in surface water samples from Pond 3.

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 1	1E-05	9E-06
Pond 2	5E-06	4E-06
Pond 3	4E-06	3E-06
Mid-Site Ravine	3E-05	3E-05

The total potential cancer risk for all pathways combined was 3E-04, which is above the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Future Non-Waste Area Outdoor Commercial/Industrial Worker Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 4E-01. The hazard index for dermal contact with chemicals in shallow soil was 8E-02. The hazard index for inhalation of air was 0E+00.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	8E-04	5E-03
Pond 5	2E-05	4E-06

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 4	3E-02	3E-02

No detected COPCs exceeded sediment screening levels in pond 5.

The total hazard index for all pathways combined was 5E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Non-Waste Area Outdoor Commercial/Industrial Worker Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 4E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 8E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 8E-07.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 4	0E+00	0E+00

No carcinogenic COPCs were detected in surface water samples from Pond 5.

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 4	3E-06	3E-06

No detected COPCs exceeded sediment screening levels in pond 5.

The total potential cancer risk for all pathways combined was 6E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Future Waste Area Construction/Utility Worker Noncancer Risk

Incidental ingestion of chemicals in soil resulted in a pathway hazard index of 8E+00. The hazard index for dermal contact with chemicals in soil was 7E-01. The hazard index for inhalation of air was 0E+00. Dermal contact with pooled water in an excavation resulted in a pathway hazard index of 3E-01. The hazard index for dermal contact with surface water in the on-site cistern was 5E-06.

The total hazard index for all pathways combined was 9E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Waste Area Construction/Utility Worker Cancer Risk

The pathway cancer risk for exposure to chemicals in soil through ingestion was $2\text{E-}05$. The pathway cancer risk for exposure to chemicals in soil through dermal contact was $2\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $1\text{E-}06$. The pathway cancer risk for exposure to chemicals through dermal contact with pooled water in an excavation was $4\text{E-}05$. No carcinogenic COPCs were detected in the surface water sample from the on-site Cistern.

The total potential cancer risk for all pathways combined was $6\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Future Non-Waste Area Construction/Utility Worker Noncancer Risk

Incidental ingestion of chemicals in soil resulted in a pathway hazard index of $9\text{E-}01$. The hazard index for dermal contact with chemicals in soil was $9\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$. Dermal contact with pooled water in an excavation resulted in a pathway hazard index of $3\text{E-}01$.

The total hazard index for all pathways combined was $1\text{E+}00$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Non-Waste Area Construction/Utility Worker Cancer Risk

The pathway cancer risk for exposure to chemicals in soil through ingestion was $2\text{E-}06$. The pathway cancer risk for exposure to chemicals in soil through dermal contact was $2\text{E-}07$. The pathway cancer risk for exposure to chemicals through inhalation of air was $1\text{E-}07$. The pathway cancer risk for exposure to chemicals through dermal contact with pooled water in an excavation was $4\text{E-}05$.

The total potential cancer risk for all pathways combined was $4\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Future Waste Area Trespasser Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $9\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $4\text{E-}01$. Ingestion of unwashed produce resulted in a hazard index of $2\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	2E-02	5E-02
Pond 2	1E-02	3E-02
Pond 3	3E-04	2E-05
Mid-Site Ravine	9E-02	2E-01

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Pond 1	2E-01	2E+00
Pond 2	7E-02	5E-01
Pond 3	5E-02	4E-01
Mid-Site Ravine	3E-01	2E+00

The total hazard index for all pathways combined was 7E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Waste Area Trespasser Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 3E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 1E-05. The pathway cancer risk for exposure to chemicals through ingestion of unwashed produce was 7E-07. The pathway cancer risk for exposure to chemicals through inhalation of air was 1E-07.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Pond 1	0E+00	0E+00
Pond 2	0E+00	0E+00
Pond 3	0E+00	0E+00
Mid-Site Ravine	0E+00	0E+00

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
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Pond 1	3E-06	2E-05
Pond 2	1E-06	8E-06
Pond 3	9E-07	7E-06
Mid-Site Ravine	8E-06	6E-05

The total potential cancer risk for all pathways combined was 1E-04, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

6.5.3.2 Off-Site Populations

Current/Future Trespasser Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 5E-01. The hazard index for dermal contact with chemicals in shallow soil was 2E-01. The hazard index for inhalation of air was 0E+00. Incidental ingestion of chemicals in surface water from ditches along the rail tracks resulted in a pathway hazard index of 3E-02. The hazard index for dermal contact with chemicals in surface water from ditches along the rail tracks was 9E-02. Incidental ingestion of chemicals in sediment from ditches along the rail tracks resulted in a pathway hazard index of 6E-01. The hazard index for dermal contact with chemicals in sediment from ditches along the rail tracks was 5E+00.

The total hazard index for all pathways combined was 6E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current/Future Trespasser Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 1E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 6E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 1E-08. The pathway cancer risk for exposure to chemicals in surface water from ditches along the rail tracks through ingestion was 0E+00. The pathway cancer risk for exposure to chemicals in surface water from ditches along the rail tracks through dermal contact was 0E+00. The pathway cancer risk for exposure to chemicals in sediment from ditches along the rail tracks through ingestion was 1E-05. The pathway cancer risk for exposure to chemicals in sediment from ditches along the rail tracks through dermal contact was 7E-05.

The total potential cancer risk for all pathways combined was $1\text{E-}04$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current/Future Recreationist at the Strip Mine Pit Noncancer Risk

Incidental ingestion of chemicals in sediment from the strip mine pit resulted in a pathway hazard index of $4\text{E-}02$. The hazard index for dermal contact with chemicals in sediment from the strip mine pit was $2\text{E-}02$.

The total hazard index for all pathways combined was $6\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current/Future Recreationist at the Strip Mine Pit Cancer Risk

The pathway cancer risk for exposure to chemicals in sediment from the strip mine pit through ingestion was $5\text{E-}06$. The pathway cancer risk for exposure to chemicals in sediment from the strip mine pit through dermal contact was $2\text{E-}06$.

The total potential cancer risk for all pathways combined was $7\text{E-}06$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $3\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $4\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $4\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $3\text{E+}00$. The hazard index for dermal contact with chemicals in shallow soil was $3\text{E-}01$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $3\text{E+}00$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $2\text{E-}04$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $2\text{E-}05$. The pathway cancer risk for exposure to chemicals through inhalation of air was $8\text{E-}08$.

The total potential cancer risk for all pathways combined was $2\text{E-}04$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $6\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $6\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $4\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $5\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $3\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $2\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $1\text{E-}08$.

The total potential cancer risk for all pathways combined was $3\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Future Adult Resident at City Park Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $6\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $8\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $7\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Child Resident at City Park Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $6\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $5\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $6\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Resident at City Park Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $3\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $3\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}08$.

The total potential cancer risk for all pathways combined was $3\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $8\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $9\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $9\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 7E-01. The hazard index for dermal contact with chemicals in shallow soil was 6E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 8E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 4E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 4E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 2E-08.

The total potential cancer risk for all pathways combined was 4E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at Faith Assembly Church Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E-01. The hazard index for dermal contact with chemicals in shallow soil was 2E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 1E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at Faith Assembly Church Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E+00. The hazard index for dermal contact with chemicals in shallow soil was 1E-01. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 1E+00. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at Faith Assembly Church Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $7E-05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $6E-06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $3E-08$.

The total potential cancer risk for all pathways combined was $8E-05$, which is within the USEPA $1E-04$ to $1E-06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5E-02$. The hazard index for dermal contact with chemicals in shallow soil was $5E-03$. The hazard index for inhalation of air was $0E+00$.

The total hazard index for all pathways combined was $5E-02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $4E-01$. The hazard index for dermal contact with chemicals in shallow soil was $4E-02$. The hazard index for inhalation of air was $0E+00$.

The total hazard index for all pathways combined was $5E-01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $2E-05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $2E-06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $1E-08$.

The total potential cancer risk for all pathways combined was $3\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $3\text{E}+00$. The hazard index for dermal contact with chemicals in shallow soil was $3\text{E-}01$. The hazard index for inhalation of air was $0\text{E}+00$.

The total hazard index for all pathways combined was $3\text{E}+00$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $2\text{E}+01$. The hazard index for dermal contact with chemicals in shallow soil was $2\text{E}+00$. The hazard index for inhalation of air was $0\text{E}+00$.

The total hazard index for all pathways combined was $3\text{E}+01$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $1\text{E-}03$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $1\text{E-}04$. The pathway cancer risk for exposure to chemicals through inhalation of air was $6\text{E-}07$.

The total potential cancer risk for all pathways combined was $1\text{E-}03$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $1\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $2\text{E-}02$. The hazard index for inhalation of air was $0\text{E}+00$.

The total hazard index for all pathways combined was $2\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E+00. The hazard index for dermal contact with chemicals in shallow soil was 1E-01. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 1E+00. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 7E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 7E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 3E-08.

The total potential cancer risk for all pathways combined was 8E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Future Adult Resident at High School Property Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 4E-02. The hazard index for dermal contact with chemicals in shallow soil was 5E-03. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 5E-02. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Child Resident at High School Property Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 4E-01. The hazard index for dermal contact with chemicals in shallow soil was 3E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 4E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Resident at High School Property Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 2E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 2E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 1E-08.

The total potential cancer risk for all pathways combined was 2E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 6E-02. The hazard index for dermal contact with chemicals in shallow soil was 8E-03. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 7E-02. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 6E-01. The hazard index for dermal contact with chemicals in shallow soil was 5E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 6E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 3E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 3E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 2E-08.

The total potential cancer risk for all pathways combined was $3\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $7\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $8\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $7\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $6\text{E+}00$. The hazard index for dermal contact with chemicals in shallow soil was $5\text{E-}01$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $7\text{E+}00$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $3\text{E-}04$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $3\text{E-}05$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}07$.

The total potential cancer risk for all pathways combined was $3\text{E-}04$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $8\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $9\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $9\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 7E-01. The hazard index for dermal contact with chemicals in shallow soil was 6E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 8E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 4E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 4E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 2E-08.

The total potential cancer risk for all pathways combined was 4E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 7E-01. The hazard index for dermal contact with chemicals in shallow soil was 9E-02. Incidental ingestion of chemicals in washed produce resulted in a pathway hazard index of 9E-04. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 8E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 6E+00. The hazard index for dermal contact with chemicals in shallow soil was 6E-01. Incidental ingestion of chemicals in washed produce resulted in a pathway hazard index of 1E-03. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 7E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 3E-04. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 3E-05. The pathway cancer risk for exposure to chemicals through inhalation of air was 2E-07. No carcinogenic COPCs were detected in washed produce samples.

The total potential cancer risk for all pathways combined was 3E-04, which is above the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 3E-01. The hazard index for dermal contact with chemicals in shallow soil was 4E-02. The hazard index for inhalation of air was 0E+00. Incidental ingestion of chemicals in sediment from the farm pond resulted in a pathway hazard index of 9E-03. The hazard index for dermal contact with chemicals in sediment from the farm pond was 5E-03.

The total hazard index for all pathways combined was 4E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 3E+00. The hazard index for dermal contact with chemicals in shallow soil was 2E-01. The hazard index for inhalation of air was 0E+00. Incidental ingestion of chemicals in sediment from the farm pond resulted in a pathway hazard index of 9E-02. The hazard index for dermal contact with chemicals in sediment from the farm pond was 1E-01.

The total hazard index for all pathways combined was 3E+00. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 2E-04. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 2E-05. The

pathway cancer risk for exposure to chemicals through inhalation of air was $3\text{E-}15$. The pathway cancer risk for exposure to chemicals in sediment from the farm pond through ingestion was $5\text{E-}06$. The pathway cancer risk for exposure to chemicals in sediment from the farm pond through dermal contact was $5\text{E-}06$.

The total potential cancer risk for all pathways combined was $2\text{E-}04$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $9\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $1\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $9\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $7\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $9\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $5\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $4\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}08$.

The total potential cancer risk for all pathways combined was $5\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Future Adult Resident at Pioneer Park Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $1\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $1\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Child Resident at Pioneer Park Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $9\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $8\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E+}00$. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Future Resident at Pioneer Park Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $5\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $5\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}08$.

The total potential cancer risk for all pathways combined was $6\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at Rural Fire Department Property Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $1\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $1\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at Rural Fire Department Property Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E+00. The hazard index for dermal contact with chemicals in shallow soil was 1E-01. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 1E+00. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at Rural Fire Department Property Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 6E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 6E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 3E-08.

The total potential cancer risk for all pathways combined was 7E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 6E-02. The hazard index for dermal contact with chemicals in shallow soil was 7E-03. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 7E-02. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 6E-01. The hazard index for dermal contact with chemicals in shallow soil was 5E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 6E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $3\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $3\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $1\text{E-}08$.

The total potential cancer risk for all pathways combined was $3\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $2\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $2\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $2\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $2\text{E+}00$. The hazard index for dermal contact with chemicals in shallow soil was $2\text{E-}01$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $2\text{E+}00$. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $1\text{E-}04$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $9\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $5\text{E-}08$.

The total potential cancer risk for all pathways combined was $1\text{E-}04$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $1\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $1\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $9\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $8\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $1\text{E+}00$. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $5\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $5\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}08$.

The total potential cancer risk for all pathways combined was $6\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $7\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $6\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 5E-01. The hazard index for dermal contact with chemicals in shallow soil was 4E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 6E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 3E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 3E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 1E-08.

The total potential cancer risk for all pathways combined was 3E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E-01. The hazard index for dermal contact with chemicals in shallow soil was 2E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 2E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 1E+00. The hazard index for dermal contact with chemicals in shallow soil was 1E-01. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 1E+00. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 7E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 7E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 4E-08.

The total potential cancer risk for all pathways combined was 8E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 2E-01. The hazard index for dermal contact with chemicals in shallow soil was 3E-02. The hazard index for inhalation of air was 0E+00.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Ditches along 169 Highway	2E-01	5E-01
Intermittent ditch	8E-04	5E-05

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Ditches along 169 Highway	2E-01	1E-01
Intermittent ditch	8E-03	1E+00

The total hazard index for all pathways combined was 1E+00. This is at the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at (b) (6) Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 2E+00. The hazard index for dermal contact with chemicals in shallow soil was 2E-01. The hazard index for inhalation of air was 0E+00.

The following hazard indices (HI) were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Ditches along 169 Highway	1E+00	1E+00
Intermittent ditch	4E-03	1E-04

The following hazard indices were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion HI</u>	<u>Dermal HI</u>
Ditches along 169 Highway	2E+00	3E+00
Intermittent ditch	7E-02	1E-01

The total hazard index for all pathways combined was 1E+01. This is above the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at (b) (6) Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 1E-04. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 1E-05. The pathway cancer risk for exposure to chemicals through inhalation of air was 6E-08.

The following cancer risks were the result of ingestion of and dermal contact with surface water from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Ditches along 169 Highway	0E+00	0E+00

No carcinogenic COPCs were detected in surface water samples from the intermittent ditch.

The following cancer risks were the result of ingestion of and dermal contact with sediment from the following water bodies:

<u>Water Body</u>	<u>Ingestion Risk</u>	<u>Dermal Risk</u>
Ditches along 169 Highway	1E-04	1E-04
Intermittent ditch	8E-06	9E-06

The total potential cancer risk for all pathways combined was $3\text{E-}04$, which is above the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $8\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $9\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $9\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $7\text{E-}01$. The hazard index for dermal contact with chemicals in shallow soil was $6\text{E-}02$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $8\text{E-}01$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident at [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was $4\text{E-}05$. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was $4\text{E-}06$. The pathway cancer risk for exposure to chemicals through inhalation of air was $2\text{E-}08$.

The total potential cancer risk for all pathways combined was $4\text{E-}05$, which is within the USEPA $1\text{E-}04$ to $1\text{E-}06$ (one in 10,000 to one in a million) acceptable risk range.

Current Adult Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of $5\text{E-}02$. The hazard index for dermal contact with chemicals in shallow soil was $6\text{E-}03$. The hazard index for inhalation of air was $0\text{E+}00$.

The total hazard index for all pathways combined was $6\text{E-}02$. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Child Resident at [REDACTED] (b) (6) [REDACTED] Noncancer Risk

Incidental ingestion of chemicals in shallow soil resulted in a pathway hazard index of 5E-01. The hazard index for dermal contact with chemicals in shallow soil was 4E-02. The hazard index for inhalation of air was 0E+00.

The total hazard index for all pathways combined was 5E-01. This is below the USEPA level of concern for noncancer risk, which is a hazard index greater than one.

Current Resident [REDACTED] (b) (6) [REDACTED] Cancer Risk

The pathway cancer risk for exposure to chemicals in shallow soil through ingestion was 3E-05. The pathway cancer risk for exposure to chemicals in shallow soil through dermal contact was 2E-06. The pathway cancer risk for exposure to chemicals through inhalation of air was 1E-08.

The total potential cancer risk for all pathways combined was 3E-05, which is within the USEPA 1E-04 to 1E-06 (one in 10,000 to one in a million) acceptable risk range.

6.5.3.3 Risk from Exposure to Lead

USEPA has provided guidance on soil lead levels for residential land use (USEPA, 1994). This guidance recommends a screening level of 400 mg/kg for lead in residential soil. The residential screening level was developed using USEPA's *Integrated Exposure Uptake Biokinetic Model* (IEUBK) using standard default residential exposure factors. This model was designed to evaluate residential exposures specifically for children since available data indicate that children are particularly sensitive to the effects of lead. A screening level that is protective of children can reasonably be expected to be protective of older populations.

At the Site, the IEUBK model was run for both the waste and non-waste areas. In addition, the USEPA Technical Review Workgroup for Lead's (TRW) adult lead model was performed for waste and non-waste area outdoor commercial/industrial workers and construction/utility workers. In the IEUBK model, default values were used with the exception of a Site-specific concentration of lead in soil and groundwater. The average blood lead concentration for the waste area child was 59.4 micrograms of lead per deciliter blood (ug/dL), with 99.991 percent of children exposed to lead having a blood lead concentration exceeding the cutoff value of 10.000 µg/dL. The average blood lead concentration for the non-waste area child was 9.81 µg/dL, with 46.924 percent of children exposed to lead having a blood lead concentration above the cutoff value of 10.000 µg/dL.

In the USEPA TRW adult lead model for outdoor commercial/industrial workers, default values were used with the exception of soil lead concentration, soil ingestion rate (0.100 g/day), exposure frequency (250 days/year), and averaging time (9,125 days/year). The blood lead concentration for outdoor commercial/industrial workers in the waste area was 4.0 µg/dL, while the 95th percentile blood lead concentration among fetuses of adult workers in the waste area was 12.3 µg/dL. The fetal blood lead concentration was above the target blood lead level of 10.0 µg/dL. The blood lead concentration for outdoor commercial/industrial workers in the non-waste area was 1.6 µg/dL, while the 95th percentile blood lead concentration among fetuses of adult workers in the non-waste area was 5.0 µg/dL. Both blood lead concentrations were below the target blood lead level of 10.0 µg/dL.

In the USEPA TRW adult lead model for construction/utility workers, default values were used with the exception of soil lead concentration, soil ingestion rate (0.330 g/day), exposure frequency (130 days/year), and averaging time (180 days/year). The blood lead concentration for construction workers in the waste area was 272.9 µg/dL, while the 95th percentile blood lead concentration among fetuses of adult workers in the waste area was 832.4 µg/dL. Both blood lead concentrations were above the target blood lead level of 10.0 µg/dL. The blood lead concentration for construction workers in the non-waste area was 9.9 µg/dL, while the 95th percentile blood lead concentration among fetuses of adult workers in the non-waste area was 30.3 µg/dL. The fetal blood lead concentration was above the target blood lead level of 10.0 µg/dL.

Since the primary exposure medium for off-Site residents is soil, off-Site residential risks were evaluated using the USEPA's default residential screening level of 400 mg/kg. The following off-site properties exhibited exposure concentrations of lead above the 400 mg/kg screening level: (b) (6), Faith Assembly Church Property, (b) (6), (b) (6), and (b) (6).

These results indicate that concentrations of lead in soil samples from the Site and above referenced off-site properties likely pose health risks to residential or commercial/industrial receptors. Output sheets of the lead modeling can be found in Appendix P.

6.6 UNCERTAINTIES

Conducting a risk assessment requires making a number of assumptions, which serve to introduce degrees of uncertainty in the final result. The following sections discuss the uncertainties resulting from chemical identification (Section 6.2), exposure assessment (Section 6.3), and toxicity assessment (Section 6.4).

6.6.1 Uncertainty Associated with Chemical Identification

At any site, it is possible that there are more individual chemical substances present than identified in the sampling and analysis effort. The selection of media to be sampled, number of samples, and analyses requested are determined by a review of the history of the site, information on current conditions, and an evaluation as to which chemicals could potentially be present. The analyses selected during the Site investigation were identified based on knowledge of historical Site practices. The use of such knowledge provides confidence that the related constituents present at the Site have been identified.

The application of quality control throughout the sampling, analysis, and data validation phases reduced uncertainty in the results. Therefore, the chemical identification phase of the risk assessment does not appear to have introduced significant uncertainty.

6.6.2 Uncertainty from Exposure Assessment

When evaluating exposure, probable scenarios are developed to estimate conditions and duration of human contact with COPCs. Scenarios are based on observations or assumptions about the current or potential activities of human populations that could result in direct exposure. To prevent underestimation of risk, scenarios incorporate exposure levels, frequencies, and durations at or near the top end of the range of probable values. This is sometimes termed a reasonable maximum exposure, one that may be unlikely or at the high end of a range of exposures, but still possible.

Default values, such as respiration rates, are used in the exposure calculations to quantify intakes. Although they are based on USEPA-validated data, there is uncertainty in the applicability of such values to any particular exposed population or individual. To compensate for this uncertainty, the default values are typically set to the upper end (usually the 90th or 95th percentile) of the normal range.

In instances where the 95 percent UCL was higher than the maximum detected concentration, the maximum detected concentration was used as the exposure concentration in the intake calculations. The use of maximum concentrations very likely results in an overestimation of risk when compared to the use of 95 percent UCLs. A 95 percent UCL is an approximation of the average concentration and thus typically results in a more statistically appropriate and less conservative evaluation. However, it should be noted that a UCL does not represent an area-weighted concentration.

Uncertainty also arises from the treatment of nondetected concentrations in the risk assessment. One-half of the reporting limit was used as a proxy concentration for nondetect samples. The actual concentration of the contaminant could be anywhere between zero and the reporting limit. This may result in either an over- or underestimation of risk.

The low yield during the groundwater sampling event in September/October 2005, resulted in agitated groundwater samples. The next groundwater sampling even, in May 2006, was performed using low-flow procedures. As a result, the groundwater samples were much less turbid. Due to the lower degree of agitations, the second round of data is more appropriate for use in evaluating a drinking water source. However, to be conservative, all groundwater data was used in the risk assessment.

All of these factors add uncertainty in the estimates of risk. However, the uncertainty is generally that risk has been overestimated, not underestimated.

6.6.3 Uncertainty from Toxicity Assessment

For some chemical substances there is little or no toxicity information available and for many chemicals, what is available is typically from animal studies. The relative strength of the available toxicological information generates some uncertainty in the evaluation of possible adverse health effects and the exposure level at which they may occur. To provide for a margin of error, USEPA applies conservative adjustments to the toxicity values.

For noncarcinogenic substances, RfD and RfC values are typically established only after uncertainty and/or modifying factors are applied. These factors may result in an RfD/RfC that is as little as a thousandth or less of the "safe" dose level determined through animal studies.

For carcinogens, the slope factor represents the 95 percent upper confidence limit of an extrapolated low dose response curve. The actual carcinogenic potency of a substance at low doses is almost certainly less. Additionally, many substances identified as carcinogens in high-dose laboratory testing may not be carcinogenic at low doses and/or may not be carcinogenic to humans. Similarly, the carcinogenicity of some compounds may not follow a linear dose-response curve.

To quantify risk from chemicals that do not have toxicity numbers posted in IRIS or HEAST, provisional numbers generated by STSC are used when available. These provisional numbers typically have not been subjected to the rigorous review process undergone by values in IRIS. Uncertainty is generated by the use of provisional numbers. However, this uncertainty is less than that generated by ignoring or qualitatively assessing risks.

Numerical toxicity values for dermal exposures have not been developed by USEPA. To quantitatively assess risk from dermal exposure, USEPA guidance recommends adjusting oral RfDs and slope factors, usually presented as administered instead of absorbed doses, by chemical-specific gastrointestinal absorption factors to account for the differing dose calculation. Because of potential differences in

patterns of distribution, metabolism, and excretion between oral and dermal routes of exposure, use of adjusted oral toxicity values may over- or under-estimate risk, depending on the chemical.

6.7 SUMMARY AND CONCLUSIONS

The potential for human health risk from exposure to chemicals at the Site was considered for soil, air, groundwater, surface water, sediment, fish tissue, and plant tissue. COPCs were identified for each medium in the waste and non-waste areas on-Site and for the different properties that were sampled in the off-Site investigation. The COPC selection process was based on a toxicity screening using published screening levels from USEPA Region 6.

Information regarding current and potential future land and water use was used to develop the exposure scenarios evaluated; many of the same exposure scenarios were evaluated for both the waste and non-waste areas. The Site is currently vacant, and the future land use has not been decided; therefore, the risk assessment evaluated resident, trespasser, and outdoor commercial/industrial scenarios. Since future occupation of the Site would necessitate development, a construction/utility scenario was also evaluated. As there are currently no restrictions or ordinances prohibiting the installation of drinking water on the Site, groundwater was evaluated as a potential potable water source. Based on these land and water use assumptions, potentially exposed populations and potentially completed pathways were identified. Off-Site properties are largely residential in nature, and are expected to remain so in the future.

Future on-Site adult and child residents were assumed to be potentially exposed to constituents in shallow (0-2 feet bgs) soil through incidental ingestion, dermal contact, and ingestion of washed produce; constituents in outdoor air through inhalation; constituents in groundwater through ingestion and dermal contact; and constituents in surface water and sediment through incidental ingestion and dermal contact. Current off-Site adult and child residents were assumed to be potentially exposed to constituents in shallow soil through incidental ingestion, dermal contact, and inhalation of fugitive dust. In addition, residents at [REDACTED] (b) (6) [REDACTED] were assumed to be potentially exposed to constituents in homegrown produce. Residents at [REDACTED] (b) (6) [REDACTED] were assumed to be potentially exposed to constituents in sediment in the farm pond. Residents at Tulsa Co. Plat (b) (6) [REDACTED] were assumed to be potentially exposed to constituents in surface water and sediment in the ditches along Highway 169 and intermittent ditch.

On-Site youth trespassers were assumed to be potentially exposed to constituents in shallow (0-2 feet bgs) soil through incidental ingestion, dermal contact, and ingestion of unwashed produce; constituents in outdoor air through inhalation; and constituents in surface water and sediment through incidental

ingestion and dermal contact. Off-Site youth trespassers were assumed to be potentially exposed to constituents in shallow soil through incidental ingestion, dermal contact, and inhalation of fugitive dust, and surface water and sediment in the ditches along the rail tracks. Off-Site recreationists were assumed to be potentially exposed to constituents in sediment in the strip mine pit.

Future on-Site Outdoor commercial/industrial workers were assumed to engage in seasonal groundskeeping/landscaping activities that could lead to exposure to constituents in shallow (0-2 feet bgs) soil through incidental ingestion and dermal contact, constituents in outdoor air, and constituents in surface water and sediment through dermal contact. Future on-Site construction/utility workers were assumed to be potentially exposed to constituents in soil through ingestion, dermal contact, and inhalation of dust; constituents in shallow groundwater through dermal contact from pooled water in an excavation trench; and constituents in surface water from the on-site cistern.

Chemical intake was calculated for each chemical in each medium using the maximum detected concentration or 95 percent UCL as the exposure concentration, whichever was applicable.

Hazard indices for the following populations exceeded the USEPA level of concern for noncancer risk, which is a hazard index greater than one:

- Future waste area adult and child residents;
- Future non-waste area adult and child residents;
- Future waste area outdoor commercial/industrial workers;
- Future waste area construction/utility workers;
- Current waste area trespassers;
- Current/Future off-site trespassers;
- Current child resident at (b) (6)
- Current adult and child residents at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6)
- Current child resident at (b) (6) ;
- Current child resident at (b) (6)
- Current child resident at (b) (6)

Excess lifetime cancer risk estimates for the following scenarios exceeded the USEPA target risk range of one in 10,000 to one in a million:

- Future waste area residents;
- Future non-waste area residents;
- Future waste area outdoor commercial/industrial workers;
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);

The following populations had excess lifetime cancer risk estimates within the USEPA target range of one in 10,000 to one in a million:

- Future non-waste area outdoor commercial/industrial workers;
- Future waste area construction/utility workers;
- Future non-waste area construction/utility workers;
- Future waste area trespassers;
- Current/Future off-site trespassers;
- Current resident at (b) (6);
- Future resident at City Park;
- Current resident at (b) (6);
- Current resident at Faith Assembly Church;
- Current resident at (b) (6);
- Current resident at (b) (6);
- Future resident at High School Property;
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Future resident at Pioneer Park;
- Current resident at Rural Fire Department Property;
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);

- Current resident at [REDACTED] (b) [REDACTED];
- Current resident at [REDACTED] (b) [REDACTED];
- Current resident at [REDACTED] (b) [REDACTED];
- Current resident at [REDACTED] (b) [REDACTED]

To evaluate potential health risks associated with exposure to lead, detected concentrations of lead in on-Site soil were used in the USEPA's IEUBK model for residents, and the adult lead model for outdoor commercial/industrial and construction/utility workers. Detected concentrations of lead in off-Site soil were compared to the USEPA recommended screening level of 400 mg/kg for residential scenarios. The results of this comparison indicate that concentrations of lead in on-Site and the following off-Site soil samples are likely to pose health risks to residential or commercial/industrial receptors: (b) (6)

[REDACTED], Faith Assembly Church property, [REDACTED] (b) (6)
[REDACTED] (b) (6)
[REDACTED]
[REDACTED], and (b) (6)

[REDACTED]

* * * * *

7.0 ECOLOGICAL EVALUATION

7.1 INTRODUCTION

This component of the risk assessment is designed to be a semi-quantitative evaluation of whether ecological receptors could experience potential adverse effects from exposure to Site-related chemicals. An ecological risk does not exist unless (1) the chemical, or stressor, has the inherent ability to cause one or more adverse effects, and (2) it co-occurs with or contacts an ecological receptor for a sufficient time and intensity to elicit the identified adverse effect (USEPA, 1992a). In order to assess the potential risk to ecological receptors the following steps are necessary:

- Identify the stressors,
- Determine the potential of the stressor to cause adverse effects,
- Determine the level at which the stressor is present in the environment, and
- Determine the availability of the stressor to ecological receptors.

This screening level ecological risk assessment (SLERA)/baseline ecological risk assessment (BERA) evaluation was conducted following the procedures outlined in *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessment* (USEPA, 1997c) and other USEPA supplemental guidance documents referenced throughout the text. The ecological evaluation is organized into the following sections:

- Ecological Site Characterization – This section provides a description of the ecology at the TFM Site. Threatened, endangered, and rare species in the area are identified, and ecological conditions that influence the presence or absence of ecological receptors are detailed.
- Ecological Evaluation Process – This section describes the methodology for this quantitative evaluation and the process of refining the list of chemicals of potential ecological concern (COPECs). Probable ecological receptors are described in general for the Site and appropriate species for the screening evaluation are selected. The primary exposure pathways are identified.
- Risk Characterization – This section evaluates the likelihood of potential risk to ecological receptors.
- Predicted Future Conditions and Potential Risk – This section discusses the likelihood of future potential risk.

- Uncertainties – This section of the evaluation explains the uncertainties inherent in the process.
- Summary – This section provides a summary of the ecological evaluation.

7.2 ECOLOGICAL SITE CHARACTERIZATION

The ecological site characterization is a description of the local ecology of the potentially impacted areas and ecological receptors. The first step in the ecological site characterization is to characterize the environmental conditions at the Site. A background search of references, including the Tulsa County Soil Surveys (USDA, 1977), topographical (topo) maps, National Wetland Inventory (NWI) maps, and various other sources, was conducted to provide preliminary information on the Site's ecological communities. A field investigation was conducted on November 27, 2006 to confirm the preliminary information obtained in developing the ecological characterization. Data recorded during the field investigation included commonly observed species, a description of the area ecology and habitat types present, and evidence of stress or any abnormal conditions observed among local flora and fauna.

Ecological clues, such as absence of typically present species, dead or dying vegetation, or unusually high numbers of a less dominant species, are important to data interpretation and risk analysis and were investigated at the TFM Site. The potential presence of sensitive receptors in the area, including threatened or endangered species, wetlands, streams, lakes, etc., were identified by reconnaissance conducted by BMcD biologists familiar with regional flora and fauna. Additionally, the U.S. Fish and Wildlife Service, Oklahoma Field Office (<http://ifw2es.fws.gov/Oklahoma/ctylist.htm>) and the Oklahoma Biological Survey's (<ftp://www.biosurvey.ou.edu/pub/countypr0503.pdf>) Tulsa County lists of threatened and endangered species were also reviewed (Chapter 3.0). Prior to the start of the RI, a survey was conducted for the American Burying Beetle at the TFM Site. None were present on the TFM Site. A copy of the survey is provided in Appendix J.

The following sections give a description of the Site, including a description of the ecological setting, potential ecological receptors, and exposure pathways.

7.2.1 Ecosystems and Species of Potential Concern

An ecological survey was conducted on November 27, 2006 within the approximately 60-acre TFM Site. Any wildlife or potential habitat at the Site was identified during the site visit. Although minimal wildlife was observed during the November 27, 2006 site visit, a list of the plants and wildlife that likely occur within the vicinity of the TFM Site is provided in Chapter 3.0.

The TFM Site is located at the south edge of Collinsville, Oklahoma. Currently, the TFM Site is vacant, and no firm development plans are in place. The TFM Site consists of a 25-acre on-site waste area and a 35.7-acre on-site non-waste area (see Section 3.0). A total of seven surface waters (Pond 1, Pond 2, Pond 3, Pond 4, Pond 5, the Mid-Site Ravine, and the Strip Mine Pit) are located within the TFM site. Soils in the on-site waste area are heavily disturbed and contain smelter operation waste material, consisting of broken retorts and condensers, slag, building debris, ash, and bricks. The on-site waste area is located within the southeast portion of the TFM property (refer to Figure 3-1). The on-site non-waste area is located in the north and west portions of the TFM property. Soils in the on-site non-waste area did not contain large amounts of smelter operation waste material. Vegetation at the Site consisted mostly open grassy and weedy areas with some scattered eastern red cedar, hackberry, cottonwood, and sycamore trees. The on-site waste area included areas of open ground covered in broken retorts and condensers, slag, building debris, ash, and bricks. Clumps of grassy and weedy vegetation occurred between areas of open ground. The on-site non-waste area consisted mostly of open grassy and weedy fields with trees growing around the abandoned buildings and along the edges of the ponds.

The TFM Site is bounded by open range land to the west, a former coal surface mine to the south, and a church and residences to the north. Old U.S. Hwy 169 (also known as North Garnett Road) and Atchinson Topeka Santa Fe railroad tracks are located along the eastern edge of the TFM Site.

The TFM Site has been previously disturbed. Minimal habitat for wildlife species is present in the on-site waste area and former smelter location. Only common species that are tolerant of human disturbances are likely to occur at the TFM Site. According to the U.S. Fish and Wildlife Service, Oklahoma Department of Wildlife Conservation, and the Oklahoma Biological Survey, four protected species are known or are likely to occur in Tulsa County. These species include the American burying beetle, bald eagle, least tern, and Texas horned lizard. None of the protected species known or likely to occur in Tulsa County were observed during the November 2006 site visit and none are likely to occur at the TFM Site because of the disturbed nature of the Site. American burying beetles were not captured during a presence absence survey that was conducted at the Site during the summer of 2005. No bald eagles, which prefer to nest and roost along large rivers and reservoirs, or raptor stick nests were observed during the site visit. Potential nesting habitat for least terns, which includes sandbars in large rivers like the Arkansas River, is not present at the Site. Although Texas horned lizards occur in open areas with clumping grasses for cover, they are unlikely to occur at the TFM Site because of the amount of disturbance and broken retorts and condensers, slag, building debris, ash, and bricks present in the open areas.

7.2.1.1 On-Site Waste Area

The on-site waste area consists primarily of previously disturbed areas that have been used for smelter operations at the TFM facility. Most of the buildings associated with the TFM facility and within the on-site waste area have been removed. Smelter operation waste material, consisting of broken retorts and condensers, slag, building debris, ash, and bricks are present on the surface of the ground in the on-site waste area. Scattered clumps of grasses and weeds are present throughout the on-site waste area. The mixed grass and weedy vegetative community within the open areas of the on-site waste area provides grazing opportunities and cover for any small mammals that may occupy the Site. Common early woody shrubs and trees are present along and between the ponds and the abandoned buildings and former building sites within the on-site waste area. These mixed shrubby and wooded areas provide cover for many of the common bird and medium to large mammal species that may occupy the Site.

A total of 5 surface waters are present in the on-site waste area of the TFM Site. These include Pond 1, Pond 2, Pond 3, the Mid-Site Ravine, and the Strip Mine Pit. The Strip Mine Pit is not technically part of the on-site waste area but was included in this evaluation since it was directly adjacent to the on-site waste area and smelter waste materials were observed to have washed into it. Pond 1 and the Strip Mine Pit are the only perennial surface water features on the TFM Site. Fish and turtles were only observed in the Strip Mine Pit. Pond 1 appears to be too shallow to support permanent populations of fish. Pond 2, Pond 3, and the Mid-Site Ravine were dry during the November 2006 site visit and are considered to be intermittent and unable to support fish populations. Pond 2 and Pond 3 are constructed of stacked broken retorts, which likely contribute to the intermittent nature of these ponds.

7.2.1.2 On-Site Non-Waste Area

Much of the on-site non-waste area is occupied by abandoned buildings associated with the former TFM smelter operation. Most of the buildings associated with the TFM facility have been removed; however, several abandoned buildings and concrete foundations still remain within the on-site non-waste area of the TFM Site. The on-site non-waste area currently consists of previously disturbed areas that have been planted with grasses but, over time, have reverted back to a mixed grassy and weedy vegetative community. Several patches of dense shrubs and trees occur along and between Pond 4 and Pond 5 and between the abandoned buildings and remaining foundations. Pond 4 and Pond 5 are the only ponds within the on-site non-waste area and are relatively small. Both ponds were dry during the November 2006 site visit and are considered ephemeral, only containing water after precipitation events. Consequently, no fish or turtle populations are likely to be within either Pond 4 or Pond 5.

7.2.1.3 Off-Site Area

In addition to the on-site waste and on-site non-waste areas of the TFM Site, off-site areas adjacent to the TFM Site were evaluated. The off-site area consisted mostly of grass pastures with scattered stands of trees, usually associated with stock ponds and intermittent and ephemeral drainages. A total of four ponds and surface waters were considered to be within the off-site area. These surface waters include a Farm Pond located north east of the TFM Site on the (b) (6) property, drainage ditches east of the railroad tracks and east of the TFM Site, drainage ditches west of the railroad tracks and east of the TFM Site, and an intermittent drainage east of the Strip Mine Pit and east of the TFM Site and Old U.S. Hwy 169, which is also known as the Southern Drainage on the (b) (6) property.

7.2.1.4 Background Area

A background area was evaluated and compared to the on-site waste, on-site non-waste, and off-site areas. The background area consisted of properties in and around Collinsville, Oklahoma and included the City Lake and a pond at (b) (6) (see Figures 2-1 through 2-4, and 4-4, and Sections 2.1.1, 2.2.1, 2.3.1, 2.4, and 2.5.1).

7.3 ECOLOGICAL EVALUATION PROCESS

The following sections summarize the screening methodology used for this Ecological Evaluation. In the evaluation process, COPECs, potentially exposed populations of wildlife, plants, and aquatic organisms, and potential pathways of exposure are identified. This assessment considers physical site features and surrounding land uses to determine the likelihood for exposure. Only completed exposure pathways (i.e., wildlife, plants, and aquatic organism receptors that come in contact with COPECs through contaminated media such as soils, sediments, and surface water) may actually pose an ecological risk.

7.3.1 Chemicals of Potential Ecological Concern

Ecological receptors, including plants and animals, are exposed to a variety of elements and chemicals throughout their lives. Additionally, the needs of an individual receptor may change seasonally as a reflection of its various life functions, such as during egg production or other reproductive activities, hibernation, or migration. While many substances are essential for the health, survival, and well being of the individual receptor, other naturally-occurring and man-made substances may have no effect on the receptor, be beneficial, or have an adverse effect on the ability of the receptor to sustain itself. Chemicals that may elicit adverse effects to ecological receptors or that had detection limits above the ecological screening level for that chemical are considered COPECs.

The first step in determining a COPEC was to review the analytical data collected for soil, sediments, surface water samples, and fish tissue samples and determine the potential exposure pathways for various species of wildlife, plants, and aquatic organisms. A summary of the previous screening investigations of COPECs at the Site and their conclusions is provided in Section 1.2.3. In surface water, sediments, soils, and fish tissue, site-related chemicals were considered as preliminary COPECs if they were detected, exceeded ecological screening levels, or had no available screening level (Tables 4-9 through 4-33). All soil and sediment chemical data is presented on a dry weight basis.

COPECs include those site-related chemicals that have the potential to impact ecological receptors. For this risk assessment, the COPECs were identified primarily through a comparison to ecological-based screening levels. The primary source of screening levels was the USEPA Region 6 *Ecological Screening Levels* table (USEPA, 2004).

Constituents with detections greater than screening levels were retained. Detections of constituents without screening levels were also retained. Constituents that were classified as non detects were not retained. Similarly, bioaccumulative compounds such as arsenic were retained even if they did not exceed screening levels.

Arsenic, lead, cadmium, and zinc were selected as COPECs for soils, surface water, and sediments for the TFM Site.

Preliminary COPECs were further evaluated and compared to toxicological benchmarks in the preliminary quantitative screening. The methods for further evaluation are discussed in the following sections.

7.3.2 Potential Ecological Receptors

For this ecological evaluation, potential ecological receptors (terrestrial and aquatic wildlife, terrestrial and aquatic plants, and soil and benthic organisms) were selected based on species observed while conducting the field investigation, habitats available at the TFM Site, and best professional judgment of what species are likely present in the area.

7.3.2.1 Terrestrial Species

Cottontail rabbits, white-tailed deer tracks, dog tracks, and raccoon tracks were observed during the November 27, 2006 site visit. Mammalian species not seen but likely to inhabit the other more shrubby or wooded areas of the Site include opossum, raccoon, red fox, squirrels, and various species of mice, shrews, and voles. Non-mammalian terrestrial species that weren't seen but likely to be present in the

area include rat snakes, wild turkey, and various songbirds. These species are likely to be exposed to soil, and surface water contaminants and soil invertebrates and vegetation that have accumulated contaminants from the TFM Site's soils.

The short-tailed shrew, white-footed mouse, meadow vole (close relatives and surrogates for the prairie vole), eastern cottontail rabbit, red fox, raccoon, white-tailed deer, American robin, and red-tailed hawk were selected as the representative terrestrial wildlife species that occur or are likely to occur at the TFM Site. Various aspects of these species' life histories and relative sensitivity to contaminants have been estimated, measured, and quantified (USEPA, 1993b; ORNL, 1996a; Efroymsen et al., 1997b; Schwartz and Schwartz, 1981; and Caire et al., 1989) and were used to evaluate potential risk. The chosen species represent several different sizes of animals (Table 7-1) and feeding guilds (Table 7-2). These species represent insectivorous (short-tailed shrew), herbivorous (white-footed mouse, eastern cottontail rabbit, and white-tailed deer), omnivorous (meadow vole, raccoon, and American robin), and carnivorous (red fox and red-tailed hawk) animals that were observed at or likely inhabit the Site (Note, body mass listed in the tables is expressed as wet weight). Most of these species likely occur on or in the vicinity of the TFM Site and have toxicological benchmarks for many of the COPECs listed in Section 7.3.1.

Various aspects of the receptor species' diets are provided in Table 7-2 and (Figure 7-1). The diet of the omnivorous meadow vole and American robin were assumed to be composed of 80 percent soil invertebrates (earthworms) and 20 percent vegetation. The diet of the omnivorous raccoon was assumed to be composed of equal parts of benthic invertebrates, soil invertebrates, fish, terrestrial plants, and small mammals. The diets of the insectivorous short-tailed shrew and the herbivorous white-footed mouse, eastern cottontail rabbit, and white-tailed deer were assumed to be composed of 100 percent soil invertebrates (earthworms) or 100 percent vegetation, respectively. It was also assumed that the omnivorous raccoon and carnivorous red fox and red-tailed hawk consumed only small mammal prey such as the mice, voles, and rabbits that inhabit the Site or area. No reptile species were selected as representative species because of the lack of toxicological benchmarks in the available literature. However, the insectivorous short-tailed shrew was selected to be the surrogate for the insectivorous reptile and toad species that likely occupy the TFM Site. The meadow vole was selected as a surrogate for the omnivorous box turtle. It was assumed that the insectivorous reptiles and toads and the herbivorous box turtle and their respective surrogates have diets made up of similar percentages of food, water, and soil.

Based on available food, their means of travel, and their relatively large size, it is likely that the red fox, raccoon, white-tailed deer, and red-tailed hawk spend only a fraction of their time in the vicinity of the

TFM smelter and operations facilities at the TFM Site. These animals have large home ranges and the area covered by the TFM Site constitutes only a fraction of these animals' total home ranges (Table 7-3). This risk assessment assumes that the potential for risk is determined by the amount of time that the species is present in the vicinity of a COPEC. Since the red fox, raccoon, white-tailed deer, and red-tailed hawk are likely to spend equal amounts of time in the different regions of their home range, it was assumed that the amount of contaminant that these animals are exposed to is dependent on the fraction that the TFM Site's on-site waste area and on-site non-waste area and off-site areas make up in their home range.

7.3.2.2 Aquatic Species

Aquatic wildlife species observed at the Site include painted turtles, and fish. Other species not observed but likely to be within the area and potentially exposed to the exposure pathways for aquatic species include aquatic and benthic invertebrates, ducks, belted kingfishers, great blue herons and various other shorebirds. These species are likely to be exposed to contaminants within the surface water, sediments, and by consuming fish, aquatic vegetation, or aquatic and benthic invertebrates that have accumulated contaminants. The raccoon, which consumes sediments, benthic invertebrates, and fish is also likely to be exposed to contaminants associated with the surface water features on and in the vicinity of the TFM Site. The fish and turtles were assumed to inhabit only the Strip Mine Pit at the Site for their entire lives. Aquatic and benthic invertebrates were assumed to inhabit all the ponds at the TFM Site. Great blue herons and belted kingfishers were assumed to forage only from the Strip Mine Pit because it is the only permanent surface water feature that is deep enough to support fish. The duck and the raccoon were also assumed to visit all the ponds on and off the TFM Site.

For the purposes of this evaluation, aquatic and benthic invertebrates, fish, aquatic plants, and the mallard duck (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), belted kingfisher (*Megascery alcyon*), and raccoon (*Procyon lotor*) were selected as the representative aquatic species that likely occur at the TFM Site and frequent the aquatic habitats. Various aspects of these species' life histories and relative sensitivity to contaminants have been estimated, measured, and quantified (USEPA, 1993b; ORNL, 1996a; Efroymson et al., 1997b; Schwartz and Schwartz, 1981; and Caire et al., 1989) and were used to evaluate potential risk. No aquatic reptile or amphibian species were selected as representative species because of the lack of toxicological benchmarks in the available literature; however, the mallard duck and belted kingfisher were selected to be surrogates for the painted turtles observed in the Strip Mine Pit at the TFM Site. The diet of the painted turtle consists of aquatic plants, aquatic invertebrates, benthic invertebrates, and fish. The mallard duck was selected as a surrogate for painted turtles because it consumes aquatic plants, aquatic invertebrates, and benthic invertebrates and inadvertently consumes

pond sediments. It was assumed that the painted turtle and the mallard duck, which occupy similar habitats, ingest and come in contact with similar amounts of sediments, aquatic plants, and aquatic invertebrates. The belted kingfisher was also selected as a surrogate for painted turtles because it consumes fish.

The mallard duck, great blue heron, belted kingfisher and raccoon represent several different sizes of animals (Table 7-1) and feeding guilds (Table 7-2). These species represent omnivorous (mallard duck and raccoon) and carnivorous (great blue heron and belted kingfisher) animals that were not observed during the field survey but likely inhabit the Site and have toxicological benchmarks for many of the COPECs listed in Section 7.3.1. Various aspects of the mallard duck, great blue heron, belted kingfisher and raccoon's diets are provided in Table 7-2. The diet of the omnivorous mallard duck was assumed to be composed of 80 percent benthic invertebrates that live in pond sediments, 10 percent aquatic invertebrates that live in the water column, and 10 percent aquatic vegetation growing in and around the ponds. The diet of the omnivorous raccoon was assumed to be composed of equal parts of benthic invertebrates, soil invertebrates, fish, terrestrial plants, and small mammals. The diets of the carnivorous great blue heron and belted kingfisher were assumed to consist 100 percent of fish that were caught in the Strip Mine Pit at the Site. It was also assumed that the belted kingfisher, which catches fish in open water, did not consume sediments, whereas the great blue heron, which is a wading shorebird, did inadvertently consume sediments as it fed on fish in the shallows. Like the mallard duck, painted turtles are omnivorous, consuming aquatic plants, and aquatic invertebrates. Painted turtles also consume small fish, which was not assumed to be part of the mallard duck's diet; however, it was assumed that the mallard duck and painted turtle consume relatively similar amounts of sediments because painted turtles feed in the water column and along the floor of the pond.

This risk assessment assumes that the potential for risk is determined by the amount of time that the species is present in the vicinity of a COPEC. Although all three bird species are migratory, they may remain in Oklahoma year round. For this assessment it was assumed that the three bird species would spend an entire year at the TFM Site and not migrate during the winter months. It was also assumed that these three species would hunt and forage for food only at the ponds at the Site. The raccoon was assumed to only spend part of its time on the TFM Site proportional to the amount that the TFM Site (on-site waste area and on-site non-waste area) is to its estimated home range (Table 7-3). The remainder of the raccoon's time, it was assumed, was spent in the off-site area.

7.3.3 Exposure Pathways

Site soils, surface water, sediment, groundwater, and plant and fish tissues were sampled at the TFM Site. These potentially impacted media may provide a contact point for ecological receptors (Figure 7-2). Site soils, terrestrial plants, and surface water were evaluated as potential exposure media for terrestrial receptors. Surface water, pond sediments, and fish tissue were evaluated as potential exposure media for aquatic species. Groundwater was not analyzed in this ecological evaluation because it was assumed that, due to the depth, the wildlife and plants at the TFM Site would not come in contact with the groundwater.

The primary completed exposure pathways (i.e., pathways for those contaminants that can reach ecological receptors) for the contaminated media and the potentially exposed ecological receptors include direct and accidental ingestion of contaminants through feeding. Soil invertebrates, burrowing animals, insectivorous animals, and herbivores may be exposed to contaminants in the soils due to ingesting soils, whether intentionally or accidentally. Aquatic species may be exposed to contaminants in the surface water and pond sediments by ingesting contaminants in the water and sediments, whether intentionally or accidentally. Plants and soil invertebrates may accumulate soil contaminants and subsequently be consumed by insectivorous, herbivorous, and omnivorous species. Predatory animals may consume smaller animals that have consumed contaminated soils or plants and other smaller animals that have accumulated contaminants. Lastly, surface water may also be a potential source of contamination. Potential site contaminants may be ingested by animals while drinking water from the various ponds at the TFM Site. Similarly, aquatic plants, fish, and aquatic and benthic invertebrates, may accumulate surface water and pond sediment contaminants and subsequently be consumed by herbivorous, insectivorous, and piscivorous birds.

Exposure pathways for many species may not be completed for a particular medium due to life history characteristics or available habitat. The following discussion provides a description of the types of ecological receptors potentially exposed to each medium along with wildlife species-specific characteristics that are used later in the COPEC screening process.

7.3.3.1 Soils

Arsenic, cadmium, lead, and zinc were detected in soil from the TFM Site. Other than designation of an on-site waste area and on-site non-waste area, no apparent hot spots were found during the data evaluation. Maximum concentrations of arsenic, cadmium, lead, and zinc were spread across the areas sampled; thus, the data were relatively homogeneous and were evaluated for their respective areas as a whole. Higher levels of arsenic, cadmium, lead, and zinc were detected in soil samples taken from the first 6 inches of soil, then in samples taken from deeper soils.

Soil organisms, including microorganisms and earthworms, may be directly exposed to impacted soil. Plants may be exposed by the uptake of nutrients through root systems. Acute and chronic toxicity effects to plants and soil organisms can be evaluated directly or indirectly through a qualitative assessment. Ecological clues such as areas devoid of vegetation, notable overpopulation of a particular species, and/or accumulation of detritus, are symptoms of toxicity to plants and/or soil organisms. Smelter operation waste material, consisting of broken retorts and condensers, slag, building debris, ash, and bricks are present on the surface of the ground in the on-site waste area. Scattered clumps of grasses and weeds are present throughout the on-site waste area growing up through the rocky waste material. Vegetation was absent from the areas with the highest amounts of broken retorts and condensers, slag, building debris, ash, and bricks of the on-site waste area. No suspicious areas devoid of vegetation, with large accumulations of detritus, or overpopulated by a particular species were observed in the on-site non-waste area during the November 2006 site visit.

Potential risk to ecological receptors from soil contaminants was assessed using analytical data for samples collected from surface soil because the concentrations of COPECs were greatest in surface soils. The TFM Site, which consists of a mix of open areas, grasses, weeds and scattered trees, contains cover and grazing opportunities for small and larger animal species. Terrestrial receptors could be exposed to soils as they graze and burrow in the on-site waste area and on-site non-waste area of the TFM Site. Thus, the soil exposure pathway was assumed to be limited to the maximum detected chemicals in surface soils within the TFM Site. The small mammal and American robin receptor species, which have relatively small home ranges, were assumed to spend all of their time and feed within either the on-site waste area or the on-site non-waste area. Large receptor species with large home ranges (e.g., red fox, raccoon, white-tailed deer, and red-tailed hawk) were assumed to spend a proportionate amount of their time in the on-site waste, on-site non-waste, and off-site areas. The proportionate amount of time was based on the fraction of a given species total home range that was made up by the on-site waste and on-site non-waste areas. It was assumed that any remaining time was spent in the adjacent off-site area.

The maximum detected concentration for each COPEC in soil, regardless of depth, was used in this evaluation. The highest levels of arsenic, cadmium, lead, and zinc were detected in soil samples taken from the first 6 inches of soil. Lower levels of arsenic, cadmium, lead, and zinc were detected in soil samples taken from subsurface soils. This is the most conservative approach because it assumes that the highest concentration for each COPEC will be encountered.

Representative species that were selected for evaluation of completed soil exposure pathways at the TFM Site include the short-tailed shrew, white-footed mouse, meadow vole, eastern cottontail rabbit, red fox,

raccoon, white-tailed deer, and American robin. All of these species for one reason or another could potentially ingest soils from the TFM Site. It was assumed that incidental ingestion of soils comprise 2.8% of the red-tailed hawk's diet, the same as the red fox. However, any soil that may potentially be in the fur of the small mammals is likely to be negligible (Sample and Suter, 1994). Red-tailed hawks capture prey while it is running about above ground, and captured prey is usually taken to a perch where it is eaten. Red foxes may dig for small animal prey and likely incidentally ingest soils.

7.3.3.2 Groundwater

Because groundwater levels in the wells at the TFM Site ranged from 3.6 to 6.7 ft bgs during a rain event in May 2006 to 7.2 to 11.7 ft bgs during dry season in Sept. 2006, it was assumed that groundwater would not be easily accessible to wildlife species throughout the year and was not considered to be a primary exposure route. Similarly, it was also assumed that the primary exposure route for plants at the TFM Site was through soils and not through exposure to the fluctuating groundwater levels at the TFM Site. Additionally, the limited presence of metals constituents within the dissolved phase groundwater indicated that migration of contaminants from the site was limited (see Section 4.5).

Upland grassland communities typically receive most of their water from surface sources (rain and rainwater runoff). The upland grasses and weeds that are common at the Site also are the primary source of forage for the wildlife receptors. Since it was assumed that the plants did not come in contact with groundwater, the contaminants within the groundwater were assumed to not enter the food chain through plant-herbivore interactions. Therefore, groundwater was not further evaluated for ecological pathways.

7.3.3.3 Surface Water

At least one surface water sample was collected from each pond and surface water feature at the TFM Site, including the Mid-Site Ravine, from adjacent off-site surface waters, and two background surface waters. All the ponds and surface water features at the TFM Site are either the result of surface disturbances or were created to detain wastewater and storm water runoff at the TFM Site. Two intermittent drainages occur west of Old U.S. Hwy 169. These northern intermittent drainage on the Tate property and drainages associated with the railroad and highway rights-of-way are connected to the TFM Site by way of culverts that cross beneath the railroad corridor, while the southern drainage on the Tate property does not have an apparent connection to the TFM site. All the terrestrial and aquatic wildlife receptor species, short-tailed shrew, white-footed mouse, meadow vole, eastern cottontail rabbit, red fox, raccoon, white-tailed deer, American robin, red-tailed hawk, belted kingfisher, great blue heron, and mallard duck are assumed to be ingesting water from the ponds on Site. The maximum concentrations

detected in the all of the ponds in the on-site waste area, on-site non-waste area, off-site area, and background area were used for evaluating the risk to terrestrial wildlife. This method of evaluating surface water exposure by representative terrestrial wildlife species is conservative in that it assumes the receptor is spending all of its time within the vicinity and/or is habitually drinking from the pond containing the highest detected concentration of each COPEC. However, it is unlikely that an individual animal will consistently ingest the maximum chemical concentrations. The representative terrestrial wildlife species that drink from ponds are likely to visit more than one pond within their home range. Other representative wildlife species, such as shrews, mice, voles, and rabbits, may actually get most of their water from the plants and animals that they ingest, rather than from ponds or surface water sources.

Representative aquatic species that were selected for evaluation of completed pond sediment exposure pathways in the on-site waste area, on-site non-waste area, off-site area, and background area include aquatic invertebrates, aquatic plants, fish, mallard duck, great blue heron, and belted kingfisher. However, it was assumed that no fish are present in the ephemeral and intermittent surface water features of the on-site non-waste area. Potential risk to ecological receptors from surface water contaminants was assessed using analytical data for samples collected from the surface waters. All the aquatic receptor species are assumed to be ingesting constituents detected in the water or from sediments from the surface waters.

7.3.3.4 Fish Tissue

Fish were only observed in the Strip Mine Pit at the southern end of the TFM Site. Fish were analyzed using the maximum concentration detected in fish tissue samples from the Strip Mine Pit as reported in USEPA's Removal Action Assessment Report for Tulsa Fuel Manufacturing Site, Collinsville, Tulsa County, Oklahoma dated May 14, 1999. The raccoon, great blue heron, and belted kingfisher are potential ecological receptors that likely inhabit the area, hunt for fish in the Strip Mine Pit, and could consume fish that have accumulated potential TFM Site constituents.

7.3.3.5 Bioaccumulation in food

For this ecological risk assessment it was assumed that all of the chemical ingested by the representative wildlife species was absorbed into the organism's tissue (100 percent bioavailability for each chemical detected at the Site). The COPECs were transferred from soil to plants, soil to soil invertebrates (earthworm), sediments to benthic invertebrates, and surface water to fish, aquatic plants, and aquatic invertebrates by uptake. It was assumed that the terrestrial insectivorous, herbivorous, and omnivorous species were consuming vegetation and earthworms that have been exposed and accumulated COPECs by root uptake (plants) or by direct ingestion of soils (earthworms). Similarly, the terrestrial carnivores (red

fox and red-tailed hawk) were assumed to consume the small mammals (shrew, white-footed mouse, vole, and cottontail rabbit) that inhabit the TFM Site. These small mammals are consuming soils, surface water, soil organisms (earthworms), and vegetation that may contain concentrations of COPECs.

It was also assumed that the omnivorous mallard duck was consuming aquatic vegetation, aquatic invertebrates, and benthic invertebrates that have been exposed and accumulated COPECs by absorption (aquatic plants) or by direct ingestion of surface water (aquatic invertebrates) and sediments (benthic invertebrates). Similarly, the piscivorous (great blue heron and belted kingfisher) were assumed to consume the fish that inhabit the ponds at the Site. The fish are assumed to be consuming sediments, surface water, and aquatic and benthic invertebrates that may contain concentrations of COPECs. It was assumed that the raccoon was consuming earthworms, benthic invertebrates, vegetation, fish, and small mammals that may contain concentrations of COPECs.

7.4 RISK CHARACTERIZATION

Risk characterization assesses the likelihood of adverse ecological effects associated with exposure to Site contamination. The risk characterization combines the quantitative evaluation with the qualitative assessment to conclude if significant risk to ecological receptors exists (USEPA, 1997c). After ecological receptors were identified, receptors with available toxicity data or benchmarks were selected. A benchmark value is a known concentration of a substance that elicits known effects ranging from no-effect to death for the ecological receptor under study. The receptor and chemical specific benchmark is compared to the chemical concentration absorbed by the receptor to yield the Ecological Hazard Quotient (EHQ). The sum of all the EHQs equals the Ecological Hazard Index (EHI), which accounts for the additive toxicity of all potential contaminants.

Chemical concentrations that exceeded benchmarks were detected in soils, sediments, and surface water. Although, no visible adverse ecological effects to terrestrial and aquatic receptors were observed during field investigations conducted by BMcD biologists, the quantitative assessment, discussed below, indicates that the plant and wildlife communities within the Site may be experiencing some adverse affects due to the detected contaminants.

7.4.1 Soil Organism Screening Methodology

In the preliminary screening, all chemicals detected were assumed to be 100 percent bioavailable to soil invertebrates (earthworms). Therefore, the maximum concentration detected in the soils in the on-site waste, on-site non-waste, off-site, and background areas was divided by the available published screening benchmarks for soil invertebrates (Efroymson et al., 1997b) to yield the EHQ (Table 7-4).

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the additive toxicity of each contaminant, EHI's were calculated for the soil organisms (earthworm) by adding the EHQs for all contaminants.

7.4.2 Benthic Invertebrate Screening Methodology

In the preliminary screening, all chemicals detected were assumed to be 100 percent bioavailable to benthic invertebrates. Therefore, the concentration detected for each COPEC in pond sediments in the on-site waste, on-site non-waste, off-site, and background areas was divided by the available published screening benchmarks for benthic invertebrates (Jones et al., 1997) to yield the EHQ (Table 7-5).

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the additive toxicity of each contaminant, EHI's were calculated for the benthic invertebrates by adding the EHQs for all contaminants.

7.4.3 Terrestrial and Aquatic Plant Benchmark Screening Methodology

The most important factor affecting plant exposure to contamination is substance solubility because only the amount of a substance that is soluble is available to plants. This is referred to as plant bioavailability. In the preliminary screening, all chemicals detected were assumed to be 100 percent bioavailable. Therefore, the maximum concentration detected for each COPEC in plant tissues, the surface water of each pond, or in soils in the on-site waste, on-site non-waste, off-site, and background areas was divided by the available published plant screening benchmarks (Efroymson et al., 1997c; Sutter and Tsao, 1996) to yield the EHQ (Tables 7-6 and 7-7).

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the additive toxicity of each contaminant, EHI's were calculated for plants by adding the EHQs for all contaminants.

7.4.4 Aquatic Invertebrate Screening Methodology

In the preliminary screening, all chemicals detected were assumed to be 100 percent bioavailable to aquatic invertebrates. Therefore, the concentration detected for each COPEC in the surface water for each pond in the on-site waste, on-site non-waste, off-site, and background areas was divided by the available published screening benchmarks for benthic invertebrates (Jones et al., 1997) to yield the EHQ (Table 7-8).

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the additive toxicity of each contaminant, EHIs were calculated for the benthic invertebrates by adding the EHQs for all contaminants.

7.4.5 Fish Screening Methodology

In the preliminary screening, all chemicals detected were assumed to be 100 percent bioavailable. Therefore, the concentration detected in fish tissues or detected for each COPEC in the surface water for the Strip Mine Pit in the on-site waste area, drainage ditches and Farm Pond in the off-site area, and City Lake in the background area was divided by the available published screening benchmarks for fish (Jones et al., 1997) to yield the EHQ (Table 7-9). Additionally, the maximum concentrations detected in fish tissue samples from the Strip Mine Pit as reported in Removal Action Assessment Report for Tulsa Fuel Manufacturing Site, Collinsville, Tulsa County, Oklahoma dated May 14, 1999 were also used to evaluate fish in the on-site waste area (Table 7-10).

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the additive toxicity of each contaminant, EHIs were calculated for the benthic invertebrates by adding the EHQs for all contaminants.

7.4.6 Wildlife Benchmark Screening Methodology

Based on the available habitat at the TFM Site, wildlife receptors potentially present were identified and compared to a list of species for which benchmarks have been established. Terrestrial receptors selected as representative species included the short-tailed shrew, white-footed mouse, meadow vole (close relative and surrogate for the prairie vole), eastern cottontail rabbit, red fox, raccoon, white-tailed deer, American robin, and red-tailed hawk. Aquatic wildlife receptors selected as representative species included the mallard duck, great blue heron, and the belted kingfisher. Benchmarks for these receptors were obtained from the Oak Ridge National Laboratories' (ORNL) *Toxicological Benchmarks for Wildlife: 1996 Revision* (ORNL, 1996a). Natural history characteristics (Tables 7-1, 7-2, and 7-3) used to calculate exposure were obtained from the *Wildlife Exposure Factors Handbook Vol. I & II* (USEPA, 1993b), *Preliminary Remediation Goals for Ecological Endpoints* (Efroymson et. al., 1997a), *Toxicological Benchmarks for Wildlife: 1996 Revision* (ORNL, 1996), *The Wild Mammals of Missouri* (Schwartz and Schwartz, 1981), and *Mammals of Oklahoma* (Caire et al., 1989).

The wildlife screening used the most conservative benchmarks expressed as the NOAEL. The NOAEL is the highest level of a stressor evaluated in a toxicity test or biological field survey that causes no statistically significant difference in effect compared with the controls or reference site (USEPA, 1997c). All contaminant exposure levels were assumed to equal the maximum detected concentrations and conservative assumptions were used in determining the initial exposure parameters. Exposure parameters are those physical factors that might influence receptor exposure. All contaminants exceeding the preliminary screening were considered preliminary COPEC and retained for the site-specific wildlife screening.

7.4.6.1 Estimation of Intake

For this ecological risk assessment, the primary routes of exposure for terrestrial and aquatic wildlife are through ingestion of food (either plant or animal), surface water, and soil and sediments (either ingested incidentally while foraging or purposefully to meet nutrient needs). The preliminary ingestion dose for a given route of exposure (food, water, soil or sediment) was calculated by multiplying the food, water, soil or sediment ingestion rate and the maximum detected concentration in the respective medium (Tables 7-11 through 7-22). Rates of food, water, and soil ingestion for the receptor species were taken from available literature (Table 7-1). The total exposure experienced by a wildlife species is represented by the sum of the exposures from each individual source (Table 7-23) and may be represented by the following equation from ORNL (1996a):

$$E_{\text{total}} = E_{\text{food}} + E_{\text{water}} + E_{\text{soil}}$$

E_{total} = exposure from all sources

E_{food} = exposure from food consumption

E_{water} = exposure from water consumption

E_{soil} = exposure through consumption of soil or sediment (either incidental or deliberate)

The exposure from all sources was divided by the weight normalized NOAEL to get the EHQ (Table 7-24). For the wildlife receptors, the NOAEL was expressed in mg/kg/day. The body mass estimates for wildlife species were taken from available literature (Table 7-1). If chemicals exceeded NOAEL benchmarks, they were considered COPECs and were retained for further evaluation. An EHQ greater than 1 indicates that the exposure to the contaminant has the potential to cause adverse effects in the organism.

For the purposes of evaluating multiple contaminant exposure, it was conservatively assumed that simultaneous exposure would result in additive toxicity from each contaminant. To account for the

additive toxicity of each contaminant, EHI's were calculated for each species by adding the EHQs for all contaminants (Table 7-25). EHQs and EHI's for each species evaluated are presented in Section 7.4.4 of this assessment.

7.4.6.2 Exposure Variables

Factors affecting wildlife exposure may include home range size, the amount of time a given species spends in a given area, bioavailability, and food, water, soil and sediment ingestion rates. Conservative assumptions were made in the preliminary screening. Receptor species with home ranges larger than the TFM Site (red fox, raccoon, white-tailed deer, and red-tailed hawk) were assumed to only spend a fraction of their time foraging within the on-site waste, and on-site non-waste areas of the TFM Site. The remainder of their time was spent foraging within the off-site areas. Smaller receptor species with home range areas less than the total area of either the on-site waste area or on-site non-waste area (short-tailed shrew, white-footed mouse, meadow vole, cottontail rabbit, and American robin) were assumed to spend 100 percent of their time within each area. The mallard duck, great blue heron, and the belted kingfisher were assumed to spend the entire year at the Site. However, the mallard duck and raccoon were assumed to spend all their time equally, feeding within the ponds at the TFM Site. Smaller receptor species such as fish, aquatic plants, and benthic and aquatic invertebrates were assumed to spend their entire lives within one pond or surface water body.

The contamination sources at the Site were within soil, surface water, and sediments. It was assumed that the ingestion route was by incidentally ingesting soil, surface water, sediments, and plants and animals that may have accumulated chemical contaminant from the soils, surface water and sediments. Although it was assumed that not all representative species ingested soil or sediments, it was assumed that each species ingested surface water from the area in which it lived. It was also assumed that all of the chemical ingested by the representative wildlife species was absorbed into the organism's tissue (100 percent bioavailability for each chemical detected at the Site).

7.4.6.2.1 Soil to Soil Organism Bioconcentration

The concentration of site-specific constituents in soil organisms (earthworms) was used to determine the exposure from consumption of earthworms by insectivorous and omnivorous receptor species, such as the short-tailed shrew, meadow vole, raccoon, and the American robin. In the case of the omnivores (vole and American robin) it was assumed that half of their exposure came from consuming earthworms and half came from consuming vegetation. Similarly, it was assumed that a portion of the raccoon's exposure was proportional to the percentage that soil invertebrates make up in its diet (20 percent). The soil to soil organism uptake of COPECs was estimated using soil to soil organism Bioconcentration Factors (BCFs).

Reported BCFs for soil organisms (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in earthworms. BCFs provide an estimate of the uptake of compounds from a medium, such as soil, to applicable receptor food items, such as soil organisms and, specifically, earthworms. The estimated concentrations of site-specific chemicals in soil invertebrates to which insectivorous wildlife are exposed are provided in Tables 7-16.

7.4.6.2.2 Soil to Plant Bioconcentration

The concentration of site-specific chemicals in plants was used to determine the exposure from consumption of vegetation by herbivorous and omnivorous receptor species, such as the white-footed mouse, meadow vole, cottontail rabbit, white-tailed deer and American robin. In the case of the omnivores (vole and American robin) it was assumed that half of their exposure came from consuming earthworms and half came from consuming vegetation. Actual plant tissue data was used to determine the concentration of site-specific chemicals in plants from the on-site waste area, off-site area, and background area. No plants from the on-site non-waste area were collected and sampled; thus, the soil to plant uptake of COPECs was estimated using soil to plant BCFs. Reported BCFs for plants (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in vegetation. BCFs provide an estimate of the uptake of compounds from a medium, such as soil, to applicable receptor food items, such as plants. The estimated concentrations of site-specific chemicals in vegetation from the on-site non-waste area that herbivorous wildlife are exposed to is provided in Table 7-19. Table 7-18 provides the maximum concentrations of site-specific chemicals in blackberry shrub samples that were collected from the on-site waste area, off-site area, and background area.

7.4.6.2.3 Sediment to Benthic Invertebrates Bioconcentration

The concentration of site-specific constituents in benthic invertebrates was used to determine the exposure from consumption of benthic invertebrates by the mallard duck and raccoon. It was assumed that 80 percent of the mallard duck's exposure came from consuming benthic invertebrates, 10 percent came from consuming aquatic invertebrates, and 10 percent came from consuming aquatic vegetation. Similarly, it was assumed that a proportion of the raccoon's exposure came from consuming benthic invertebrates (crayfish). The sediment to benthic invertebrate uptake of COPECs was estimated using sediment to benthic invertebrate Bioconcentration Factors (BCFs). Reported BCFs for benthic invertebrates (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in benthic invertebrates. BCFs provide an estimate of the uptake of compounds from a medium, such as pond sediments, to applicable receptor food items, such as benthic invertebrates. The estimated concentrations of site-specific chemicals in benthic invertebrates to which mallard ducks are exposed are provided in Table 7-14.

7.4.6.2.4 Surface Water to Aquatic Invertebrate Bioconcentration

The concentration of site-specific constituents in free swimming aquatic invertebrates was used to determine the exposure from consumption of aquatic invertebrates by the mallard duck. It was assumed that 80 percent of the mallard duck's exposure came from consuming aquatic invertebrates, 10 percent came from consuming benthic invertebrates, and 10 percent came from consuming aquatic vegetation. The surface water to aquatic invertebrate uptake of COPECs was estimated using water to aquatic invertebrate Bioconcentration Factors (BCFs). Reported BCFs for benthic invertebrates (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in aquatic invertebrates. BCFs provide an estimate of the uptake of compounds from a medium, such as surface water, to applicable receptor food items, such as aquatic invertebrates like daphnia. The estimated concentrations of site-specific chemicals in aquatic invertebrates to which mallard ducks are exposed are provided in Table 7-15.

7.4.6.2.5 Sediment to Aquatic Plant Bioconcentration

The concentration of site-specific constituents in aquatic vegetation was used to determine the exposure from consumption of aquatic vegetation by the mallard duck. It was assumed that 10 percent of the mallard duck's exposure came from consuming aquatic plants, 10 percent from consuming aquatic invertebrates, and 80 percent came from consuming benthic invertebrates. The pond sediment to aquatic plant uptake of COPECs was estimated using sediment to aquatic plant Bioconcentration Factors (BCFs). Reported BCFs for aquatic plants (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in aquatic plants. BCFs provide an estimate of the uptake of compounds from a medium, such as pond sediments, to applicable receptor food items, such as aquatic plants. The estimated concentrations of site-specific chemicals in aquatic plants to which mallard ducks are exposed are provided in Table 7-17.

7.4.6.2.6 Prey to Predator Biotransfer

The exposure of prey species to site-specific chemicals was used to determine the exposure for predatory receptor species, such as the raccoon, great blue heron, and belted kingfisher, from consumption of fish and the red fox, raccoon, and red-tailed hawk, from consumption of small mammals like the short-tailed shrew, white-footed mouse, meadow vole, and cottontail rabbit. Specifically, the total intake for piscivorous receptor species such as the raccoon, great blue heron, and belted kingfisher was based on the maximum chemical concentrations detected in the fish tissue samples collected in fish tissue samples from the Strip Mine Pit as reported in the USEPA's Removal Action Assessment Report for Tulsa Fuel Manufacturing Site, Collinsville, Tulsa County, Oklahoma dated May 14, 1999 or the maximum

calculated chemical dose estimates for fish in the off-site and background areas. The total intake for predatory receptor species that consume small mammal prey such as the red fox, raccoon, and red-tailed hawk was based on the maximum chemical concentrations detected in the short-tailed shrew, white-footed mouse, meadow vole, or cottontail rabbit.

The terrestrial predator's chemical intake, based on ingestion of small mammal prey, is provided in Table 7-22 and the total dose received for each of the four small mammal prey species is provided in Table 7-23. The estimated maximum detected concentration in the small mammals was estimated to be the total exposure from food consumption for the red fox, raccoon, and red-tailed hawk.

Actual fish tissue data was used to determine the concentration of site-specific chemicals in fish from the Strip Mine Pit in the on-site waste area. No fish tissue data exists for the off-site area or background areas; thus, the surface water to fish uptake of COPECs was estimated using surface water to fish BCFs. Reported BCFs for fish (USEPA, 1999b) for each of the COPECs were used to calculate the estimated concentration of each COPEC in fish tissue from the off-site area and background areas. BCFs provide an estimate of the uptake of compounds from a medium, such as surface water, to applicable receptor food items, such as fish. The estimated concentrations of site-specific chemicals in fish tissue that piscivorous wildlife are exposed to is provided in Tables 7-20 and 7-21.

7.4.6.2.7 Home Range

The size of the receptor species home range is also factored into the receptor species total exposure from all sources. For example, the on-site waste area (25 acres in size) and the on-site non-waste area (35.7 acres in size) represent a fraction of total area within the home ranges of the red fox, raccoon, white-tailed deer, and red-tailed hawk (Table 7-3). This risk assessment assumes that the potential for risk is determined by the amount of time that the species is present in the vicinity of a COPEC. Since the red fox, raccoon, white-tailed deer, and red-tailed hawk are likely to spend equal amounts of time in the different regions of their home range, it was assumed that the amount of risk that these animals are exposed to is proportional to the fraction that a given area makes up in their home range. This represents the fraction of the time that these species will likely spend within the on-site waste area, on-site non-waste area, and off-site area. The total dose received by each receptor species, based on the fraction of the species home range within each area, is provided in Tables 7-24.

7.4.7 Hazard Quotient Analysis

Tables 7-4 through 7-10 provide the calculated ecological hazard quotients, based on available benchmarks, for the plants, invertebrates, and fish in the on-site waste area, on-site non-waste area, off-

site area, and background area. Tables 7-24 through 7-25 provide the calculated EHQ and EHI for the representative species of concern: short-tailed shrew, white-footed mouse, meadow vole, eastern cottontail rabbit, red fox, raccoon, white-tailed deer, American robin, and red-tailed hawk, belted kingfisher, great blue heron, and mallard duck. The following sections summarize EHQ, cumulative EHI, and identify the largest potential contributors to overall hazard.

7.4.7.1 Risk Estimates

The following paragraphs detail the results of the risk characterization. In general, the highest exposure was from soils and sediments within the on-site waste area and the lowest exposure was from the background area.

7.4.7.1.1 Soil Invertebrates

Populations of soil invertebrates (earthworms) from the on-site waste area ($EHI = 8.98E+02$) experienced the most risk from exposure to COPECs (Table 7-4). Soil invertebrates in the on-site non-waste area ($EHI = 2.23E+02$) experienced a similar, although slightly less, amount of risk from exposure to COPECs than soil invertebrates from the off-site area ($EHI = 2.34E+02$). As anticipated, soil invertebrates from the background area ($EHI = 1.30E+00$) experienced the least amount of risk from exposure to COPECs.

The results of the on-site waste area soil invertebrate benchmark screening for soils, presented in Table 7-4, indicated that the soil invertebrates in the vicinity of the on-site waste area received a significant dose of arsenic ($EHQ = 1.95E+01$), cadmium ($EHQ = 1.16E+01$), lead ($EHQ = 4.22E+01$), and zinc ($EHQ = 8.25E+02$) from the soils in the on-site waste area.

The results of the on-site non-waste area soil invertebrate benchmark screening for soils, presented in Table 7-4, indicated that the soil invertebrates in the on-site non-waste area received a significant dose of arsenic ($EHQ = 6.93E+00$), cadmium ($EHQ = 5.71E+00$), lead ($EHQ = 3.04E+00$), and zinc ($EHQ = 2.07E+02$) from the soils in the on-site non-waste area.

The results of the soil invertebrate benchmark screening for soils in the off-site area (i.e., rights-of-way for railroad and Old US Hwy 169, Oklahoma Department of Transportation property) east of the TFM Site indicated that the soil invertebrates in the off-site area received a significant dose of arsenic ($EHQ = 1.08E+01$), cadmium ($EHQ = 1.38E+00$), lead ($EHQ = 9.35E+00$), and zinc ($EHQ = 2.13E+02$) from the soils in the off-site area (Table 7-4).

The soil invertebrates in the background area received relatively minimal doses the soils in the background area because arsenic, cadmium, lead, and zinc all had EHQs less than 1 (Table 7-4).

7.4.7.1.2 Terrestrial Plants

Populations of terrestrial plants (blackberry shrubs) from the on-site waste area ($\text{EHI} = 2.27\text{E}+01$) experienced a greater amount of risk from exposure to COPECs than blackberry shrubs from the off-site area ($\text{EHI} = 2.62\text{E}+00$) or the background area ($\text{EHI} = 5.44\text{E}-01$) (Table 7-6). The estimated amount of risk from exposure to COPECs that terrestrial plants from the on-site non-waste area ($\text{EHI} = 1.00\text{E}+03$) experienced was greater than the amount of risk experienced by blackberry shrubs from the on-site waste area. These results are due to the fact that terrestrial plant samples were collected and analyzed from the on-site waste area, off-site area, and background area and that the risk from exposure to COPECs that terrestrial plants from the on-site non-waste area experienced was estimated using the maximum concentration detected in soils from the on-site non-waste area.

Most of the risk from exposure to COPECs that terrestrial plants (blackberry shrubs) from the on-site waste area experienced is derived from zinc ($\text{EHQ} = 1.20\text{E}+01$) and lead ($\text{EHQ} = 9.78\text{E}+00$). Cadmium and arsenic had EHQs less than 1 and contributed little to the risk from exposure to COPECs.

Within the on-site non-waste area, most of the estimated risk from exposure to COPECs that terrestrial plants experienced is derived from zinc ($\text{EHQ} = 8.28\text{E}+02$) and lead ($\text{EHQ} = 1.03\text{E}+02$) but arsenic ($\text{EHQ} = 4.16\text{E}+01$) and cadmium ($\text{EHQ} = 2.76\text{E}+01$) also contributed to the risk from exposure to COPECs.

Most of the risk from exposure to COPECs that terrestrial plants (blackberry shrubs) from the off-site area experienced is derived from zinc ($\text{EHQ} = 2.50\text{E}+00$). Arsenic, cadmium, and zinc had EHQs less than 1 and contributed little to the risk from exposure to COPECs.

Terrestrial plants (blackberry shrubs) from the background area experienced very little risk from exposure to COPECs because arsenic, cadmium, lead, and zinc all had EHQs less than 1.

7.4.7.1.3 Benthic Invertebrates

Populations of benthic invertebrates from Pond 1 ($\text{EHI} = 1.88\text{E}+03$) and the Mid-Site Ravine ($\text{EHI} = 1.33\text{E}+03$) of the on-site waste area experienced more risk from exposure to COPECs within the on-site waste area than benthic invertebrates from Pond 2 ($\text{EHI} = 4.59\text{E}+02$) or Pond 3 ($\text{EHI} = 3.43\text{E}+02$) (Table 7-5). Populations of benthic invertebrates from the Strip Mine Pit ($\text{EHI} = 9.57\text{E}+01$) experienced the least amount of risk from exposure to COPECs within the on-site waste area. Within the on-site non-waste area, benthic invertebrates from Pond 4 ($\text{EHI} = 2.19\text{E}+02$) experienced more risk from exposure to COPECs than did benthic invertebrates from Pond 5 ($\text{EHI} = 2.01\text{E}+01$). Populations of benthic invertebrates from the drainage ditches east of the railroad tracks in the off-site area ($\text{EHI} = 1.43\text{E}+03$) experienced more risk from exposure to COPECs than benthic invertebrates from the drainage ditches

west of the railroad tracks (EHI = $4.67\text{E}+02$) or the intermittent drainage east of the Strip Mine Pit (EHI = $4.92\text{E}+01$). Populations of benthic invertebrates from the Farm Pond (EHI = $1.30\text{E}+01$) experienced the least amount of risk from exposure to COPECs within the off-site area. As anticipated, benthic invertebrates from the City Lake (EHI = $7.47\text{E}+00$) and the pond at (b) (6) (EHI = $6.44\text{E}+00$) from the background area experienced the least amount of risk from exposure to COPECs. In general, arsenic, cadmium, lead, and zinc, all contributed to the risk from exposure to COPECs experienced by benthic invertebrates. For Pond 5 of the on-site non-waste area, arsenic and cadmium were not detected but were evaluated using one-half the detection limit. For the City Lake and the pond at (b) (6), arsenic, cadmium, and lead were not detected but were evaluated using one-half the detection limit.

7.4.7.1.4 Aquatic Invertebrates

Populations of aquatic invertebrates from the Mid-Site Ravine (EHI = $1.40\text{E}+03$) and Pond 1 (EHI = $2.87\text{E}+02$) of the on-site waste area experienced more risk from exposure to COPECs within the on-site waste area than aquatic invertebrates from Pond 2 (EHI = $1.70\text{E}+02$) or Pond 3 (EHI = $6.38\text{E}+01$) (Table 7-8). Populations of aquatic invertebrates from the Strip Mine Pit (EHI = $1.71\text{E}+01$) experienced the least amount of risk from exposure to COPECs within the on-site waste area. Within the on-site non-waste area, aquatic invertebrates from Pond 4 (EHI = $1.30\text{E}+02$) experienced more risk from exposure to COPECs than did aquatic invertebrates from Pond 5 (EHI = $2.27\text{E}+01$). Populations of aquatic invertebrates from the drainage ditches along Old U.S. Hwy 169 (EHI = $1.50\text{E}+03$) in the off-site area experienced more risk from exposure to COPECs than aquatic invertebrates from the intermittent drainage east of the Strip Mine Pit (EHI = $3.52\text{E}+01$). Populations of aquatic invertebrates from the Farm Pond (EHI = $1.71\text{E}+01$) experienced the least amount of risk from exposure to COPECs within the off-site area. As anticipated, aquatic invertebrates within the City Lake (EHI = $1.71\text{E}+01$) in the background area experienced little risk from exposure to COPECs. In general, all the surface waters sampled had at least one COPEC that was not detected. Arsenic, cadmium, and lead were not detected in surface water samples taken from Pond 5 from the on-site non-waste area and the intermittent drainage east of the Strip Mine Pit in the off-site area. No COPECs were detected in the Strip Mine Pit from the on-site waste area, the Farm Pond of the off-site area, and City Lake from the background area. The COPECs that were not detected were evaluated using one-half the detection limit.

7.4.7.1.5 Aquatic Plants

Populations of aquatic plants from the Mid-Site Ravine (EHI = $3.67\text{E}+02$) and Pond 1 (EHI = $7.46\text{E}+01$) of the on-site waste area experienced more risk from exposure to COPECs within the on-site waste area than aquatic plant populations from Pond 2 (EHI = $3.72\text{E}+01$) or Pond 3 (EHI = $1.66\text{E}+01$) (Table 7-7).

Populations of aquatic plants from the Strip Mine Pit ($\text{EHI} = 1.35\text{E}+00$) experienced the least amount of risk from exposure to COPECs within the on-site waste area. Within the on-site non-waste area, aquatic plants from Pond 4 ($\text{EHI} = 4.40\text{E}+01$) experienced more risk from exposure to COPECs than did aquatic plants from Pond 5 ($\text{EHI} = 9.96\text{E}+00$). Within the off-site area, populations of aquatic plants from the drainage ditches along Old U.S. Hwy 169 ($\text{EHI} = 3.79\text{E}+02$) experienced more risk from exposure to COPECs than aquatic plants from the intermittent drainage east of the Strip Mine Pit ($\text{EHI} = 2.96\text{E}+01$). Populations of aquatic plants from the Farm Pond ($\text{EHI} = 1.35\text{E}+00$) experienced the least amount of risk from exposure to COPECs within the off-site area. As anticipated, aquatic plants within the City Lake ($\text{EHI} = 1.35\text{E}+00$) in the background area experienced little risk from exposure to COPECs. In general, all the surface waters sampled had at least one COPEC that was not detected. Arsenic, cadmium, and lead were not detected in surface water samples taken from Pond 5 from the on-site non-waste area and the intermittent drainage east of the Strip Mine Pit in the off-site area. No COPECs were detected in surface water collected from the Strip Mine Pit from the on-site waste area, the Farm Pond of the off-site area, and City Lake from the background area. The COPECs that were not detected were evaluated using one-half the detection limit.

7.4.7.1.6 Fishes

The majority of the surface water features within the on-site waste area (Pond 2, Pond 3, and the Mid-Site Ravine) and all of the surface water features within the on-site non-waste area (Pond 4 and Pond 5) are considered intermittent and not likely to support fish. Additionally, Pond 1 in the on-site waste area is shallow and not likely able to support fish. Within the off-site area, the drainage ditches east of the TFM Site likely are intermittent; however, they were carried through the evaluation for fishes. Based on the concentrations detected in surface water (Table 7-9), fish populations within the drainage ditches along Old U.S. Hwy 169 ($\text{EHI} = 3.48\text{E}+02$) and within the intermittent drainage east of the Strip Mine Pit ($\text{EHI} = 2.51\text{E}+01$) in the off-site area experienced more risk from exposure to COPECs than fish from the Farm Pond ($\text{EHI} = 1.81\text{E}+00$). Additionally, fish populations from the Strip Mine Pit ($\text{EHI} = 1.81\text{E}+00$) and City Lake ($\text{EHI} = 1.81\text{E}+00$) experienced a similar amount of risk from exposure to COPECs as fish from the Farm Pond. This is because no COPECs were detected in surface water collected from the Strip Mine Pit from the on-site waste area, the Farm Pond of the off-site area, and City Lake from the background area. The COPECs that were not detected were evaluated using one-half the detection limit.

If the actual maximum concentration detected in fish tissue samples from the Strip Mine Pit (as reported in the May 14, 1999 Removal Action Assessment Report for Tulsa Fuel Manufacturing Site, Collinsville, Tulsa County, Oklahoma) are used to evaluate fish exposure, fish in the Strip Mine Pit ($\text{EHI} = 6.32\text{E}+02$) experienced more risk from exposure to COPECs than fish within the drainage ditches along Old U.S.

Hwy 169 ($\text{EHI} = 1.75\text{E}+02$) (Table 7-10). This result is because the maximum concentration of arsenic, cadmium, lead, and zinc detected in tissues taken from fish within the Strip Mine Pit is greater than the maximum concentrations detected in the surface water of the Strip Mine Pit.

7.4.7.1.7 Short-tailed Shrew

The short-tailed shrew has a relatively small home range. For the purposes of this evaluation, it was assumed that a short-tailed shrew that occurred in the on-site waste, on-site non-waste, off-site, and background area, occurred 100 percent of the time in its respective area. The amount of risk from exposure to COPECs that a short-tailed shrew is exposed to is based on the maximum concentrations detected in the soils (Table 7-11) and surface water (Table 7-13) sampled and the modeled uptake concentrations calculated for soil invertebrates (Table 7-16).

Short-tailed shrews experienced more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 2.21\text{E}+03$) than the on-site non-waste area ($\text{EHI} = 7.23\text{E}+02$); however, short-tailed shrews from the off-site area ($\text{EHI} = 8.20\text{E}+02$) experienced more risk from exposure to COPECs than short-tailed shrews from the on-site non-waste area but less risk than short-tailed shrews from the on-site waste area (Table 7-25). As expected, short-tailed shrews that occupied background areas ($\text{EHI} = 1.73\text{E}+01$) experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that short-tailed shrews from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 1.12\text{E}+03$) but cadmium ($\text{EHQ} = 5.00\text{E}+02$), lead ($\text{EHQ} = 3.92\text{E}+02$), and zinc ($\text{EHQ} = 1.94\text{E}+02$) also contributed to risk (Table 7-24). Short-tailed shrews from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates (earthworms) and the least amount of risk from consuming surface water. The estimated maximum dose of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soils; however, the estimated maximum dose of arsenic and lead received from inadvertently consuming soils was greater than what was estimated from consuming soil invertebrates.

Most of the risk from exposure to COPECs that short-tailed shrews from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 3.99\text{E}+02$) and cadmium ($\text{EHQ} = 2.46\text{E}+02$) but lead ($\text{EHQ} = 2.82\text{E}+01$), and zinc ($\text{EHQ} = 4.87\text{E}+01$) also contributed to risk (Table 7-24). Short-tailed shrews from the on-site non-waste area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates (earthworms) and the least amount of risk from consuming surface water. The estimated maximum dose of cadmium and zinc received from consuming soil invertebrates was greater

than what was estimated from inadvertently consuming soils; however, the estimated maximum dose of arsenic and lead received from inadvertently consuming soils was greater than what was estimated from consuming soil invertebrates.

Most of the risk from exposure to COPECs that short-tailed shrews from the off-site area experienced is derived from arsenic ($\text{EHQ} = 6.24\text{E}+02$) but cadmium ($\text{EHQ} = 5.96\text{E}+01$), lead ($\text{EHQ} = 8.68\text{E}+01$), and zinc ($\text{EHQ} = 5.00\text{E}+01$) also contributed to risk (Table 7-24). Short-tailed shrews from the off-site area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates (earthworms) and the least amount of risk from consuming surface water. The estimated maximum dose of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soils; however, the estimated maximum dose of arsenic and lead received from inadvertently consuming soils was greater than what was estimated from consuming soil invertebrates.

Almost all of the risk from exposure to COPECs that short-tailed shrews from the background area experienced is derived from arsenic ($\text{EHQ} = 1.54\text{E}+01$) and cadmium ($\text{EHQ} = 1.54\text{E}+00$) (Table 7-24). Lead and zinc had EHQs less than 1 and contributed little to the risk from exposure to COPECs. Short-tailed shrews from the background area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates (earthworms) and the least amount of risk from consuming surface water. The estimated maximum dose of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soils; however, the estimated maximum dose of arsenic and lead received from inadvertently consuming soils was greater than what was estimated from consuming soil invertebrates.

7.4.7.1.8 White-footed Mouse

The white-footed mouse has a relatively small home range. For the purposes of this evaluation, it was assumed that a white-footed mouse that occurred in the on-site waste, on-site non-waste, off-site, and background area, occurred 100 percent of the time in its respective area. The amount of risk from exposure to COPECs that a white-footed mouse is exposed to is based on maximum concentrations detected in soil (Table 7-11), surface water (Table 7-13), and vegetation sampled (Table 7-18) and the modeled uptake concentrations calculated for vegetation in the on-site non-waste area where no vegetation was sampled (Table 7-19).

White-footed mice experienced slightly more risk from exposure to COPECs from the on-site non-waste area ($\text{EHI} = 6.12\text{E}+01$) than the on-site waste area ($\text{EHI} = 5.48\text{E}+01$) (Table 7-25). White-footed mice

from the off-site area experienced more risk ($\text{EHI} = 1.90\text{E}+01$) from exposure to COPECs than white-footed mice from the background area ($\text{EHI} = 6.62\text{E}-01$). As anticipated, white footed mice from the background areas experienced the least amount of risk from exposure to COPECs. White-footed mice from the on-site non-waste area experienced more risk than white-footed mice from the on-site waste areas. This is likely due to the use of analytical field data for chemical concentrations within on-site vegetation for the on-site waste area and the use of estimated chemical concentrations within vegetation from the on-site non-waste area. Since no vegetation was sampled from the on-site non-waste area, modeled uptake concentrations were calculated for vegetation in the on-site non-waste area. The chemical concentrations for vegetation from the on-site waste area, which were derived analytically, were less than estimated chemical concentrations in vegetation from the on-site non-waste area, which were modeled using soil concentrations from the on-site non-waste area.

Most of the risk from exposure to COPECs that white-footed mice from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 3.63\text{E}+01$) and lead ($\text{EHQ} = 1.86\text{E}+01$) but cadmium ($\text{EHQ} = 2.86\text{E}+00$) and zinc ($\text{EHQ} = 1.89\text{E}+00$) also contributed to risk (Table 7-24). White-footed mice from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from consuming surface water. The estimated maximum dose of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming vegetation.

Most of the risk from exposure to COPECs that white-footed mice from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 2.65\text{E}+01$) and cadmium ($\text{EHQ} = 2.46\text{E}+01$) but lead ($\text{EHQ} = 3.25\text{E}+00$) also contributed to risk (Table 7-24). Zinc had an EHQ less than 1 and contributed little to the risk from exposure to COPECs. White-footed mice from the on-site non-waste area experienced the most risk from exposure to COPECs from consuming soils and vegetation and the least amount of risk from consuming surface water. The estimated maximum doses of arsenic, cadmium, and lead received from consuming vegetation was greater than what was estimated from inadvertently consuming soils. The estimated maximum doses of zinc received from inadvertently soils consuming was greater than what was estimated from consuming vegetation.

Most of the risk from exposure to COPECs that white-footed mice from the off-site area experienced is derived from arsenic ($\text{EHQ} = 1.50\text{E}+01$) but lead ($\text{EHQ} = 3.12\text{E}+00$) also contributed to risk (Table 7-24). Cadmium and zinc had EHQ s less than 1 and contributed little to the risk from exposure to COPECs. White-footed mice from the off-site area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from consuming surface water. The estimated maximum

doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated for consuming vegetation.

White-footed mice from the background area experienced very little risk from exposure to COPECs because arsenic, cadmium, lead, and zinc had EHQs less than 1.

7.4.7.1.9 Cottontail Rabbit

The cottontail rabbit has a relatively small home range. For the purposes of this evaluation, it was assumed that a cottontail rabbit that occurred in the on-site waste, on-site non-waste, off-site, and background area, occurred 100 percent of the time in its respective area. The amount of risk from exposure to COPECs that a cottontail rabbit is exposed to is based on maximum concentrations detected in soils (Table 7-11), surface water (Table 7-13), and vegetation sampled (Table 7-18) and the modeled uptake concentrations calculated for vegetation in the on-site non-waste area where no vegetation was sampled (Table 7-19).

Cottontail rabbits experienced more risk from exposure to COPECs from the on-site waste area ($EHQ = 4.42E+02$) than the on-site non-waste area ($EHQ = 2.81E+02$) (Table 7-25). Cottontail rabbits from the off-site area experienced more risk ($EHQ = 2.05E+02$) from exposure to COPECs than cottontail rabbits from the background area ($EHQ = 5.10E+00$) but less risk than cottontail rabbits from the on-site non-waste and on-site waste areas. As anticipated, cottontail rabbits from the background areas experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that cottontail rabbits from the on-site waste area experienced is derived from arsenic ($EHQ = 3.24E+02$) and lead ($EHQ = 1.70E+02$) but cadmium ($EHQ = 2.92E+01$) and zinc ($EHQ = 1.84E+01$) also contributed to risk (Table 7-24). Cottontail rabbits from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from consuming surface water. The estimated maximum dose of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming vegetation.

Most of the risk from exposure to COPECs that cottontail rabbits from the on-site non-waste area experienced is derived from arsenic ($EHQ = 1.62E+02$) and cadmium ($EHQ = 9.50E+01$) but lead ($EHQ = 1.90E+01$) and zinc ($EHQ = 4.37E+00$) also contributed to risk (Table 7-24). Cottontail rabbits experienced the least amount of risk from exposure to COPECs from consuming surface water. With the exception of zinc, cottontail rabbits from the on-site non-waste area received relatively similar doses of arsenic, cadmium, and lead from consuming vegetation and inadvertently consuming soils in the on-site

non-waste area. This is most likely due to the use of soil detections being used to estimate chemical concentrations within vegetation from the on-site non-waste area. Uptake modeling was used for vegetation in the on-site non-waste area because no plants from the on-site non-waste area were sampled.

Most of the risk from exposure to COPECs that cottontail rabbits from the off-site area experienced is derived from arsenic ($\text{EHQ} = 1.62\text{E}+02$) and lead ($\text{EHQ} = 3.42\text{E}+01$) but cadmium ($\text{EHQ} = 3.56\text{E}+00$) and zinc ($\text{EHQ} = 4.70\text{E}+00$) also contributed to risk (Table 7-24). Cottontail rabbits from the off-site area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from consuming surface water. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming vegetation.

Almost all of the risk from exposure to COPECs that cottontail rabbits from the background area experienced is derived from arsenic ($\text{EHQ} = 4.58\text{E}+00$) (Table 7-24). Cadmium, lead, and zinc all had EHQs less than 1 and contributed little to the risk from exposure to COPECs. Cottontail rabbits from the background area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from consuming surface water. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming vegetation.

7.4.7.1.10 Meadow Vole

The meadow vole has a relatively small home range. For the purposes of this evaluation, it was assumed that a meadow vole that occurred in the on-site waste, on-site non-waste, off-site, and background area, occurred 100 percent of the time in its respective area. The amount of risk from exposure to COPECs that a meadow vole is exposed to is based on maximum concentrations detected in soils (Table 7-11), surface water (Table 7-13), and vegetation sampled (Table 7-18) and the modeled uptake concentrations calculated for soil invertebrates from all areas and vegetation from the on-site non-waste area where no vegetation was sampled (Table 7-19).

Meadow voles experienced more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 2.01\text{E}+02$) than the on-site non-waste area ($\text{EHI} = 8.67\text{E}+01$) (Table 7-25). Meadow voles from the off-site area ($\text{EHI} = 6.89\text{E}+01$) experienced more risk from exposure to COPECs than meadow voles from the background area ($\text{EHI} = 1.60\text{E}+00$) but less risk than meadow voles from the on-site non-waste and on-site waste areas. As anticipated, meadow voles from the background area experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that meadow voles from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 9.64\text{E}+01$) and cadmium ($\text{EHQ} = 5.74\text{E}+01$) but lead ($\text{EHQ} = 2.57\text{E}+01$) and zinc ($\text{EHQ} = 2.13\text{E}+01$) also contributed to risk (Table 7-24). Meadow voles from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates and the least amount of risk from consuming vegetation and surface water. The estimated maximum doses of arsenic, cadmium, and zinc received from consuming soils invertebrates was greater than what was estimated from inadvertently consuming soil; however, estimated maximum doses of lead received from inadvertently consuming soil was greater than what was estimated from consuming soil invertebrates. Although, the maximum lead concentration detected in on-site waste area soils is relatively high (71,700 mg/kg) the soil to soil invertebrate BCF for lead was relatively low (0.03).

Most of the risk from exposure to COPECs that meadow voles from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 4.02\text{E}+01$) and cadmium ($\text{EHQ} = 3.84\text{E}+01$) but zinc ($\text{EHQ} = 5.32\text{E}+00$) and lead ($\text{EHQ} = 2.69\text{E}+00$) also contributed to risk (Table 7-24). Meadow voles from the on-site non-waste area experienced the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic, cadmium, and zinc received from consuming soils invertebrates was greater than what was estimated from consuming vegetation or inadvertently consuming soil; however, estimated maximum doses of lead received from inadvertently consuming soil was greater than what was estimated from consuming soil invertebrates or vegetation.

Most of the risk from exposure to COPECs that meadow voles from the off-site area experienced is derived from arsenic ($\text{EHQ} = 5.13\text{E}+01$) but cadmium ($\text{EHQ} = 6.86\text{E}+00$), zinc ($\text{EHQ} = 5.49\text{E}+00$), and lead ($\text{EHQ} = 5.26\text{E}+00$) also contributed to risk (Table 7-24). Meadow voles from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates and the least amount of risk from consuming vegetation and surface water. The estimated maximum doses of arsenic, cadmium, and zinc received from consuming soils invertebrates was greater than what was estimated from inadvertently consuming soil; however, estimated maximum doses of lead received from inadvertently consuming soil was greater than what was estimated from consuming soil invertebrates. Although, the maximum concentration detected in on-site waste area soils is relatively high (15,900 mg/kg) the soil to soil invertebrate BCF for lead was relatively low (0.03).

Almost all of the risk from exposure to COPECs that meadow voles from the background area experienced is derived from arsenic ($\text{EHQ} = 1.34\text{E}+00$) (Table 7-24). Cadmium, lead, and zinc all had EHQs less than 1 and contributed little to the risk from exposure to COPECs. The majority of the total

dose received from arsenic, cadmium, lead, and zinc was from consuming soil invertebrates and inadvertently consuming soils.

7.4.7.1.11 American Robin

The American robin is a migratory species that typically has a relatively small home range. For the purposes of this evaluation, it was assumed that an American robin that occurred in the on-site waste, on-site non-waste, off-site, and background area, was a year round inhabitant and occurred 100 percent of the time in its respective area. The amount of risk from exposure to COPECs that an American robin is exposed to is based on maximum concentrations detected in soil (Table 7-11), surface water (Table 7-13), and vegetation sampled (Table 7-18) and the modeled uptake concentrations calculated for soil invertebrates (Table 7-16) from all areas and vegetation from the on-site non-waste area where no vegetation was sampled (Table 7-19).

American robins experienced more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 1.78\text{E}+04$) than the on-site non-waste area ($\text{EHI} = 3.21\text{E}+03$) (Table 7-25). American robins from the off-site area ($\text{EHI} = 4.09\text{E}+03$) experienced slightly more risk from exposure to COPECs than American robins from the on-site non-waste area but less risk than American robins from the on-site waste area. As anticipated, American robins from the background area ($\text{EHI} = 1.90\text{E}+01$) experienced the least amount of risk.

Most of the risk from exposure to COPECs that American robins from the on-site waste area experienced is derived from lead ($\text{EHQ} = 9.15\text{E}+03$) and zinc ($\text{EHQ} = 7.45\text{E}+03$) but cadmium ($\text{EHQ} = 1.17\text{E}+03$) and arsenic ($\text{EHQ} = 5.08\text{E}+01$) also contributed to risk (Table 7-24). American robins from the on-site waste area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates and the least amount of risk from consuming vegetation and surface water. The estimated maximum doses of arsenic and lead received from inadvertently consuming soil was greater than what was estimated from consuming soils invertebrates; however, estimated maximum doses of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soil. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from consuming water was less than what was estimated for consuming vegetation.

Most of the risk from exposure to COPECs that American robins from the on-site non-waste area experienced is derived from zinc ($\text{EHQ} = 1.86\text{E}+03$) but lead ($\text{EHQ} = 7.01\text{E}+02$), and cadmium ($\text{EHQ} = 6.22\text{E}+02$), and arsenic ($\text{EHQ} = 1.86\text{E}+01$) also contributed to risk (Table 7-24). American robins from the on-site non-waste area experienced the least amount of risk from exposure to COPECs from

consuming surface water. The estimated maximum doses of arsenic and lead received from inadvertently consuming soils was greater than what was estimated from consuming vegetation or consuming soil invertebrates; however, estimated maximum doses of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soil invertebrates or vegetation.

Most of the risk from exposure to COPECs that American robins from the off-site area experienced is derived from lead (EHQ = 2.01E+03) and zinc (EHQ = 1.92E+03) but cadmium (EHQ = 1.39E+02) and arsenic (EHQ = 2.80E+01) also contributed to risk (Table 7-24). American robins from the off-site area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates and the least amount of risk from consuming vegetation and surface water. The estimated maximum doses of arsenic and lead received from inadvertently consuming soil was greater than what was estimated from consuming soil invertebrates; however, estimated maximum doses of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soil. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from consuming water was less than what was estimated for consuming vegetation.

Most of the risk from exposure to COPECs that American robins from the background area experienced is derived from zinc (EHQ = 9.14E+00) and lead (EHQ = 5.59E+00) but cadmium (EHQ = 3.59E+00) also contributed to risk (Table 7-24). American robins from the background area experienced very little risk from arsenic because it has an EHQ less than 1. American robins from the background area experienced the most risk from exposure to COPECs from consuming soils and soil invertebrates and the least amount of risk from consuming vegetation and surface water. The estimated maximum doses of arsenic and lead received from inadvertently consuming soil was greater than what was estimated from consuming soils invertebrates; however, estimated maximum doses of cadmium and zinc received from consuming soil invertebrates was greater than what was estimated from inadvertently consuming soil. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from consuming water was less than what was estimated for consuming vegetation.

7.4.7.1.12 White-tailed Deer

The white-tailed deer has a relatively large home range (Table 7-3). For the purposes of this evaluation, it was assumed that the white-tailed deer would only spend an amount of time in the on-site waste and on-site non-waste areas that is proportional to the percent of their home range that comprises the on-site waste (7.8 percent) and on-site non-waste areas (11.2 percent). It was also assumed that white-tailed deer would spend the remaining percent of their time (81.0 percent) in the adjacent off-site area. The amount

of risk that a white-tailed deer is exposed to is based on maximum concentrations detected in soils (Table 7-11), surface water (Table 7-13), and vegetation sampled (Table 7-18) and modeled uptake concentrations calculated for vegetation in the on-site non-waste area where no vegetation was sampled (Table 7-19).

White-tailed deer experienced more risk from exposure to COPECs from the on-site non-waste area ($\text{EHI} = 8.73\text{E}+00$) than from the on-site waste area ($\text{EHI} = 6.65\text{E}+00$); however, white-tailed deer from the off-site area ($\text{EHI} = 2.20\text{E}+01$) experienced more risk from exposure to COPECs than white-tailed deer from the on-site waste and on-site non-waste area (Table 7-25). Even if the exposures that a white-tailed deer experienced from the on-site waste and on-site non-waste areas are combined ($\text{EHI} = 1.54\text{E}+01$) the white-tailed deer experiences more risk from exposure to COPECs from the off-site area than from on-site. This is a direct result of the amount of time that a white-tailed deer spends within each area and because the concentrations of COPECs in vegetation from the on-site non-waste area were estimated. No vegetation samples from the on-site non-waste area were collected and analyzed. As anticipated, white-tailed deer that spend all of their time within the background area ($\text{EHI} = 9.48\text{E}-01$) experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that white-tailed deer from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 4.05\text{E}+00$) and lead ($\text{EHQ} = 2.07\text{E}+00$) (Table 7-24). Zinc and cadmium with EHQ s less than 1, contributed very little to the risk from exposure to COPECs experienced by white-tailed deer from the on-site waste area. Within the on-site waste area, the most risk from exposure to COPECs experienced by white-tailed deer was from consuming soils and the least amount of risk was from consuming surface water. The estimated maximum dose of arsenic, cadmium, lead, and zinc received from consuming vegetation was less than inadvertently consuming soils but was greater than what was estimated from consuming surface water.

Most of the risk from exposure to COPECs that white-tailed deer from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 4.24\text{E}+00$) and cadmium ($\text{EHQ} = 3.91\text{E}+00$) (Table 7-24). Lead and zinc, with EHQ s less than 1, contributed very little to the risk from exposure to COPECs experienced by white-tailed deer from the on-site non-waste area. In general, white-tailed deer from the on-site non-waste area experienced the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic, cadmium, and lead received from consuming vegetation was greater than what was estimated from inadvertently consuming soils or consuming surface water; however, estimated maximum doses of zinc received from inadvertently consuming soil was greater than what was estimated from consuming vegetation or surface water. The relatively high

estimated amount of risk from exposure to COPECs from consuming plants may be the result of using soil to plant BCF to determine the concentration of chemicals in vegetation from the on-site non-waste area. A soil to plant BCF was used because no blackberry samples were taken from the on-site non-waste area.

Most of the risk from exposure to COPECs that white-tailed deer from the off-site area experienced is derived from arsenic ($\text{EHQ} = 1.74\text{E}+01$) and lead ($\text{EHQ} = 3.61\text{E}+00$) (Table 7-24). Cadmium and zinc, with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by white-tailed deer from the off-site area. White-tailed deer from the off-site area experienced the most risk from exposure to COPECs from consuming soils and the least amount of risk from exposure to COPECs from consuming vegetation and surface water. The estimated maximum doses of arsenic, lead, and zinc received from inadvertently consuming vegetation was greater than what was estimated from consuming surface water; however, estimated maximum doses of cadmium received from consuming surface water was greater than what was estimated from consuming vegetation.

Arsenic, cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by white-tailed deer from the background area (Table 7-24). White-tailed deer from the background area experienced the least amount of risk from exposure to COPECs from consuming surface water and the most risk from exposure to COPECs from consuming vegetation and inadvertently consuming soils. The estimated maximum doses of arsenic, cadmium, and lead received from inadvertently consuming soil was greater than what was estimated from consuming vegetation; however, estimated maximum doses of zinc received from consuming vegetation was greater than what was estimated from inadvertently consuming soil.

7.4.7.1.13 Red Fox

The red fox has a relatively large home range (Table 7-3). For the purposes of this evaluation, it was assumed that the red fox would only spend an amount of time in the on-site waste and on-site non-waste areas that is proportional to the percent of their home range that comprises the on-site waste (16.7 percent) or on-site non-waste area (23.8 percent). It was also assumed that the red fox would spend the remaining percent of their time (59.5 percent) in the adjacent off-site area. The amount of risk from exposure to COPECs that a red fox is exposed to is based on maximum concentrations detected in soils (Table 7-11) and surface water (Table 7-13) sampled and the modeled uptake concentrations calculated for small mammal prey species that inhabit each area evaluated (Table 7-22).

Red foxes experienced slightly more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 4.06\text{E}+01$) than the on-site non-waste area ($\text{EHI} = 2.10\text{E}+01$); however, red foxes from the off-site area ($\text{EHI} = 5.81\text{E}+01$) experienced more risk from exposure to COPECs than red foxes from either the on-site waste or the on-site non-waste areas (Table 7-25). These results are directly related to the amount of time that a red fox spends within each area. Red foxes experience more risk from exposure to COPECs on-site than off-site if the exposures that a red fox experienced from the on-site waste and on-site non-waste areas are combined ($\text{EHI} = 6.16\text{E}+01$). As anticipated, red foxes that spend all of their time within the background area ($\text{EHI} = 2.16\text{E}+00$) experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that red foxes from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 2.42\text{E}+01$) and lead ($\text{EHQ} = 1.26\text{E}+01$) but cadmium ($\text{EHQ} = 2.31\text{E}+00$) and zinc ($\text{EHQ} = 1.43\text{E}+00$) also contributed to risk (Table 7-24). Red foxes from the on-site waste area experienced the most risk from exposure to COPECs from inadvertently consuming soils and the least amount of risk from consuming surface water. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was less than what was estimated from consuming small mammal prey from the on-site waste area.

Most of the risk from exposure to COPECs that red foxes from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 1.41\text{E}+01$) but cadmium ($\text{EHQ} = 4.83\text{E}+00$) and lead ($\text{EHQ} = 1.56\text{E}+00$) also contributed to risk (Table 7-24). Zinc, with an EHQ less than 1, contributed very little to the risk from exposure to COPECs experienced by red foxes from the on-site non-waste area. Red foxes from the on-site non-waste area experienced the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming small mammal prey from the on-site non-waste area; however, the estimated maximum dose of cadmium received from consuming small mammal prey from the on-site non-waste area was greater than what was estimated from inadvertently consuming soil. The relatively high estimated amount of risk from consuming cadmium in small mammal prey species may be the result of using soil to plant BCF to determine the concentration of chemicals in vegetation that were consumed by the small mammals from the on-site non-waste area. A soil to plant BCF was used because no blackberry samples were taken from the on-site non-waste area.

Most of the risk from exposure to COPECs that red foxes from the off-site area experienced is derived from arsenic ($\text{EHQ} = 4.62\text{E}+01$) but lead ($\text{EHQ} = 9.62\text{E}+00$), zinc ($\text{EHQ} = 1.29\text{E}+00$), and cadmium ($\text{EHQ} = 1.01\text{E}+00$) also contributed to risk (Table 7-24). Red foxes from the off-site area experienced the most risk from exposure to COPECs from inadvertently consuming soils and the least amount of risk

from exposure to COPECs from consuming water. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soils was greater than what was estimated from consuming small mammal prey from the off-site area.

Most of the risk from exposure to COPECs that red foxes in the background area experienced is derived from arsenic ($\text{EHQ} = 2.02\text{E}+00$). Cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by red foxes in the background area (Table 7-24). Red foxes in the background area experienced the least amount of risk from exposure to COPECs from consuming surface water and the most risk from exposure to COPECs from inadvertently consuming soils. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from inadvertently consuming soil was greater than what was estimated from consuming small mammal prey from the off-site area.

7.4.7.1.14 Red-tailed Hawk

The red-tailed hawk has a relatively large home range (Table 7-3). For the purposes of this evaluation, it was assumed that the red-tailed hawk would only spend an amount of time in the on-site waste and on-site non-waste area that is proportional to the percent of its home range that comprises the on-site waste (2.7 percent) or on-site non-waste areas (3.8 percent). It was also assumed that red-tailed hawks would spend the remaining percent of their time (93.5 percent) in the adjacent off-site area. The amount of risk that a red-tailed hawk is exposed to is based on maximum concentrations detected in surface water (Table 7-13) samples and the modeled uptake concentrations calculated for small mammal prey species that inhabit each area (Table 7-22). It was assumed, however, that 2.8 percent of the red-tailed hawks diet is comprised of soils inadvertently consumed. The percentage of soils, inadvertently consumed, that make up the diets of red-tailed hawks and red foxes are assumed to be the same.

Red-tailed hawks experienced more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 3.26\text{E}+02$) than the on-site non-waste area ($\text{EHI} = 4.27\text{E}+01$); however, red-tailed hawks from the off-site area ($\text{EHI} = 6.71\text{E}+01$) experienced slightly more risk from exposure to COPECs than red-tailed hawks from the on-site non-waste areas but less than red-tailed from the on-site waste area (Table 7-25). As anticipated, red-tailed hawks that spend all of their time within the background area ($\text{EHI} = 4.05\text{E}-01$) experienced the least amount of risk from exposure to COPECs.

Most of the risk from exposure to COPECs that red-tailed hawks from the on-site waste area experienced is derived from lead ($\text{EHQ} = 2.73\text{E}+02$) but zinc ($\text{EHQ} = 4.81\text{E}+01$) and cadmium ($\text{EHQ} = 4.68\text{E}+00$) also contributed to risk (Table 7-24). Arsenic, with an EHQ less than 1, contributed very little to the risk

from exposure to COPECs experienced by red-tailed hawks from the on-site waste area. Red-tailed hawks from the on-site waste area experienced the most risk from consuming soils and small mammal prey from the on-site waste area and the least amount of risk from consuming surface water.

Most of the risk from exposure to COPECs that red-tailed hawks from the on-site non-waste area experienced is derived from lead (EHQ = $2.37\text{E}+01$) but cadmium (EHQ = $6.87\text{E}+00$) and zinc (EHQ = $1.18\text{E}+00$) also contributed to risk (Table 7-24). Arsenic, with an EHQ less than 1, contributed very little to the risk from exposure to COPECs experienced by red-tailed hawks from the on-site non-waste area. Red-tailed hawks from the on-site non-waste area experienced the greatest amount of risk from exposure to COPECs from consuming soils and small mammal prey from the on-site non-waste area and the least amount of risk from consuming surface water.

Most of the risk from exposure to COPECs that red-tailed hawks from the off-site area experienced is derived from lead (EHQ = $5.45\text{E}+01$) but zinc (EHQ = $1.16\text{E}+01$) also contributed to risk (Table 7-24). Arsenic and cadmium, with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by red-tailed hawks from the off-site area. Red-tailed hawks from the off-site area experienced the greatest amount of risk from exposure to COPECs from consuming soils and small mammal prey from the off-site area and the least amount of risk from consuming surface water.

Arsenic, cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by red-tailed hawks from the background area (Table 7-24). Red-tailed hawks from the background area experienced the greatest amount of risk from exposure to COPECs from consuming soils and small mammal prey from the off-site area and the least amount of risk from consuming surface water.

7.4.7.1.15 Great Blue Heron

The great blue heron is a migratory species and typically has a relatively large home range. For the purposes of this evaluation, it was assumed that the great blue heron was a year round inhabitant feeding from the ponds in each area. It was also assumed that a great blue heron would spend 100 percent of its time feeding only within a given area (the Strip Mine Pit in the on-site area and surface waters of the off-site and background areas). The amount of risk from exposure to COPECs that a great blue heron is exposed to is based on maximum concentrations detected in samples taken from surface water (Table 7-13), sediments (Table 7-12), and fish from the Strip Mine Pit (Table 7-20) or the modeled uptake concentrations calculated for fish from the off-site and background surface waters (Table 7-21). It was assumed that the intermittent and ephemeral ponds and surface waters in the on-site waste and on-site

non-waste areas did not contain fish and did not represent a possible exposure pathway for great blue herons.

Great blue herons from the off-site area ($EHQ = 3.56E+02$) experienced more risk from exposure to COPECs than great blue herons from the on-site waste area ($EHQ = 1.91E+02$) (Table 7-25). Great blue herons from the background area ($EHQ = 7.87E-01$) experienced the least amount of risk from exposure to COPECs. These results are due to the fact that concentrations of COPECs within fish from the Strip Mine Pit were analyzed using actual fish tissue samples while concentrations within fish from the off-site and background areas were estimated using surface water to fish BCFs.

Most of the risk from exposure to COPECs that great blue herons from the on-site waste area experienced is derived from lead ($EHQ = 1.21E+02$) and zinc ($EHQ = 5.18E+01$) but cadmium ($EHQ = 1.62E+01$) and arsenic ($EHQ = 1.93E+00$) also contributed to risk from exposure to COPECs (Table 7-24). Great blue herons from the on-site waste area experienced the most risk from exposure to COPECs from consuming sediments from the Strip Mine Pit and the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic, cadmium, lead, and zinc received from consuming fish from the Strip Mine Pit was greater than what was estimated from consuming surface water but less than what was estimated from consuming sediments.

Most of the risk from exposure to COPECs that great blue herons from the off-site area experienced is derived from zinc ($EHQ = 2.40E+02$) and lead ($EHQ = 8.15E+01$) but cadmium ($EHQ = 3.32E+01$) and arsenic ($EHQ = 1.13E+00$) also contributed to risk from exposure to COPECs (Table 7-24). In general, great blue herons from the off-site area experienced the most risk from exposure to COPECs from consuming sediments and fish and the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic and cadmium received from consuming fish was greater than what was estimated from consuming surface water but less than what was estimated from consuming sediments. The estimated maximum dose of lead received from consuming surface water was greater than what was estimated from consuming fish but less than what was estimated from consuming sediments; however, the estimated maximum dose of zinc received from consuming sediments was greater than what was estimated from consuming surface water but less than what was estimated from consuming fish.

Arsenic, cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by great blue herons from the background area (Table 7-24). In general great blue herons from the background area experienced the most risk from exposure to COPECs

from consuming sediments and fish and the least amount of risk from exposure to COPECs from consuming surface water. The estimated maximum doses of arsenic and cadmium received from consuming sediments was greater than what was estimated from consuming surface water but less than what was estimated from consuming fish. The estimated maximum doses of lead and zinc received from consuming sediments was greater than what was estimated from consuming either fish or surface water.

7.4.7.1.16 Belted Kingfisher

The belted kingfisher is a migratory species that typically has a relatively small home range. For the purposes of this evaluation, it was assumed that the belted kingfisher was a year round inhabitant feeding from the ponds in each area. It was also assumed that a belted kingfisher would spend 100 percent of its time feeding only within a given area (the Strip Mine Pit in the on-site area and surface waters of the off-site and background areas). The amount of risk from exposure to COPECs that a belted kingfisher is exposed to is based on maximum concentrations detected in samples taken from surface water (Table 7-13) and fish from the Strip Mine Pit (Table 7-20) or the modeled uptake concentrations calculated for fish from the off-site and background surface waters (Table 7-21). It was assumed that the intermittent and ephemeral ponds and surface waters in the on-site waste and on-site non-waste areas did not contain fish and did not represent a possible exposure pathway for belted kingfishers.

Belted kingfishers from the off-site area ($\text{EHI} = 6.67\text{E}+02$) experienced more risk from exposure to COPECs than belted kingfishers from the on-site waste area ($\text{EHI} = 8.93\text{E}-01$) (Table 7-25). Belted kingfishers from the background area ($\text{EHI} = 1.03\text{E}+00$) experienced less risk from exposure to COPECs than belted kingfishers from the off-site area but more risk from exposure to COPECs than belted kingfishers from the on-site waste area. These results are due to the fact that concentrations of COPECs within fish from the Strip Mine Pit were analyzed using actual fish tissue samples while concentrations within fish from the off-site and background areas were estimated using surface water to fish BCFs.

Arsenic, cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by belted kingfishers from the on-site waste area (Table 7-24). Belted kingfishers from the on-site waste area experienced the greatest amount of risk from exposure to COPECs from consuming fish from the Strip Mine Pit and the least amount of risk from consuming surface water.

Most of the risk from exposure to COPECs that belted kingfishers from the off-site area experienced is derived from zinc ($\text{EHQ} = 6.04\text{E}+02$) but cadmium ($\text{EHQ} = 6.28\text{E}+01$) also contributed to risk (Table 7-24). Arsenic and lead, with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by belted kingfishers from the off-site area. The estimated maximum doses of

arsenic, cadmium, and zinc received from consuming fish was greater than what was estimated from consuming surface water; however, the estimated maximum dose of lead received from consuming surface water was greater than what was estimated from consuming fish.

Arsenic, cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by belted kingfishers from the background area (Table 7-24). The estimated maximum doses of arsenic, cadmium, and zinc received from consuming fish was greater than what was estimated from consuming surface water; however, the estimated maximum dose of lead received from consuming surface water was greater than what was estimated from consuming fish.

7.4.7.1.17 Mallard Duck

The mallard duck is a migratory species that has a relatively small home range. For the purposes of this evaluation, it was assumed that the mallard duck was a year round inhabitant feeding from the ponds in each area. It was also assumed that a mallard duck would spend 100 percent of its time feeding only within a given area (on-site waste area, on-site non-waste area, off-site area, and background area). The amount of risk that a mallard duck is exposed to is based on the maximum concentrations detected in surface water (Table 7-13) and sediments (Table 7-12) sampled and modeled uptake concentrations calculated for aquatic plants (Table 7-17), and benthic and aquatic invertebrates (Tables 7-14 and 7-15). It was also assumed that benthic and aquatic invertebrates and aquatic plants were present in the intermittent and ephemeral ponds and surface waters of the TFM Site.

Mallard ducks from the background area experienced the least amount of risk ($\text{EHI} = 2.38\text{E}+00$) from exposure to COPECs and mallard ducks from the on-site waste area ($\text{EHI} = 8.39\text{E}+02$) experienced the greatest amount of risk (Table 7-25). However, mallard ducks from the off-site area ($\text{EHI} = 5.71\text{E}+02$) experienced more risk from exposure to COPECs than mallard ducks from the on-site non-waste area ($\text{EHI} = 9.70\text{E}+01$). This is likely due to the relatively high detected concentrations of metals within the ditches to the east of the on-site waste areas.

Most of the risk from exposure to COPECs that mallard ducks from the on-site waste area experienced is derived from cadmium ($\text{EHQ} = 3.85\text{E}+02$), lead ($\text{EHQ} = 2.73\text{E}+02$), and zinc ($\text{EHQ} = 1.73\text{E}+02$) but arsenic ($\text{EHQ} = 8.50\text{E}+00$) also contributed to risk (Table 7-24). In general, mallard ducks from the on-site waste area experienced the most risk from exposure to COPECs from consuming benthic invertebrates and sediments and the least amount of risk from consuming aquatic plants, aquatic invertebrates, and surface water.

Most of the risk from exposure to COPECs that mallard ducks from the on-site non-waste area experienced is derived from lead (EHQ = $4.58E+01$), zinc (EHQ = $2.69E+01$), and cadmium (EHQ = $2.35E+01$) (Table 7-24). Arsenic with an EHQ less than 1, contributed very little to the risk from exposure to COPECs experienced by mallard ducks from the off-site area. In general, mallard ducks from the on-site non-waste area experienced the most risk from exposure to COPECs from consuming benthic and aquatic invertebrates and sediments and the least amount of risk from consuming aquatic plants and surface water. The estimated maximum doses of arsenic, cadmium, lead and zinc were higher from consuming benthic invertebrates than from consuming aquatic invertebrates.

Most of the risk from exposure to COPECs that mallard ducks from the off-site area experienced is derived from lead (EHQ = $2.58E+02$), cadmium (EHQ = $1.93E+02$), and zinc (EHQ = $1.14E+02$) but arsenic (EHQ = $4.94E+00$) also contributed to risk (Table 7-24). In general, mallard ducks from the off-site area experienced the most risk from exposure to COPECs from consuming benthic invertebrates and the least amount of risk from consuming surface water.

Most of the risk from exposure to COPECs that mallard ducks from the background area experienced is derived from cadmium (EHQ = $1.02E+00$). Arsenic, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by mallard ducks from the background area (Table 7-24). In general, mallard ducks from the background area experienced the most risk from exposure to COPECs from consuming benthic invertebrates and the least amount of risk from consuming surface water.

7.4.7.1.18 Raccoon

The raccoon has a relatively large home range. For the purposes of this evaluation, it was assumed that the raccoon would only spend an amount of time in the on-site waste and on-site non-waste areas that is proportional to the percent of its home range that includes the on-site waste (5.2 percent) and on-site non-waste areas (7.4 percent). It was also assumed that raccoons would spend the remaining percent of their time (87.4 percent) in the adjacent off-site area. The amount of risk from exposure to COPECs that a raccoon is exposed to is based on maximum concentrations detected in surface water (Table 7-13), sediments (Table 7-12), soils (Table 7-11), vegetation (Table 7-18), and fish (Table 7-20) sampled and the modeled uptake concentration calculated for benthic invertebrates (Table 7-14), soil invertebrates (Table 7-16), fish (Table 7-21), and small mammals (Table 7-22) from each area and terrestrial plants from the on-site non-waste area where no vegetation was sampled (Table 7-19).

Raccoons experienced more risk from exposure to COPECs from the on-site waste area ($\text{EHI} = 2.90\text{E}+01$) than the on-site non-waste area ($\text{EHI} = 8.58\text{E}+00$) (Table 7-25). Raccoons from the off-site area ($\text{EHI} = 2.59\text{E}+02$) experienced more risk from exposure to COPECs than raccoons from the on-site non-waste and on-site waste areas. As anticipated, raccoons from the background area ($\text{EHI} = 4.23\text{E}+00$) experienced the least amount of risk from exposure to COPECs. These results are directly related to the amount of time that a raccoon spends within each area.

Most of the risk from exposure to COPECs that raccoons from the on-site waste area experienced is derived from arsenic ($\text{EHQ} = 1.67\text{E}+01$) but cadmium ($\text{EHQ} = 7.59\text{E}+00$), lead ($\text{EHQ} = 3.59\text{E}+00$), and zinc ($\text{EHQ} = 1.10\text{E}+00$) also contributed to risk (Table 7-24). In general, raccoons from the on-site waste area experienced the most risk from exposure to COPECs from consuming benthic invertebrates, soil, soil invertebrates, and sediments and the least amount of risk from consuming terrestrial plants, surface water, and fish from the Strip Mine Pit. The estimated maximum doses of arsenic and cadmium were highest in benthic invertebrates, lead was highest in soils, and zinc was highest in soil invertebrates.

Most of the risk from exposure to COPECs that raccoons from the on-site non-waste area experienced is derived from arsenic ($\text{EHQ} = 5.04\text{E}+00$) and cadmium ($\text{EHQ} = 2.70\text{E}+00$) (Table 7-24). Lead and zinc, with EHQ s less than 1, contributed very little to the risk from exposure to COPECs experienced by raccoons from the on-site non-waste area. In general, raccoons from the on-site non-waste area experienced the most risk from exposure to COPECs from consuming soil, soil invertebrates and benthic invertebrates and raccoons from the on-site non-waste area experienced the least amount of risk from consuming surface water. The estimated maximum doses of arsenic and lead were highest from consuming soils and the estimated maximum doses of cadmium and zinc was highest from consuming soil invertebrates. It was assumed that raccoons from the on-site non-waste area did not consume fish because neither Pond 4 nor Pond 5 of the on-site non-waste area are permanent and do not contain fish populations.

Most of the risk from exposure to COPECs that raccoons from the off-site area experienced is derived from arsenic ($\text{EHQ} = 1.59\text{E}+02$) and cadmium ($\text{EHQ} = 7.24\text{E}+01$) but lead ($\text{EHQ} = 2.01\text{E}+01$) and zinc ($\text{EHQ} = 7.99\text{E}+00$) also contributed to risk (Table 7-24). In general, raccoons from the off-site area experienced the most risk from exposure to COPECs from consuming benthic invertebrates and soils and the least amount of risk from consuming terrestrial plants and surface water. The estimated maximum doses of arsenic, cadmium and lead were highest from consuming benthic invertebrates and the estimated maximum dose of zinc was highest from consuming benthic invertebrates.

Most of the risk from exposure to COPECs that raccoons from the background area experienced is derived from arsenic (EHQ = 3.57E+00) (Table 7-24). Cadmium, lead, and zinc, all with EHQs less than 1, contributed very little to the risk from exposure to COPECs experienced by raccoons from the background area. In general, raccoons from the background area experienced the most risk from exposure to COPECs from consuming benthic invertebrates, soil invertebrates, soils, and sediments and the least amount of risk from consuming fish, small mammals, terrestrial plants, and surface water. The estimated maximum doses of arsenic and cadmium were highest from consuming benthic invertebrates, lead was highest from consuming soils, and the estimated maximum dose of zinc was highest from consuming soil invertebrates.

7.5 UNCERTAINTIES

When evaluating the ecological risks, several inherent uncertainties exist. These uncertainties pertain to all aspects of the risk analysis. In order to evaluate the potential ecological risk, several assumptions must be made. Uncertainties associated with this ecological evaluation are presented in the following assumptions.

- The samples collected adequately cover all areas of concern and accurately represent what is occurring at the Site.
- All ecological receptors, including plants and wildlife, are identified.
- All chemicals are identified.
- Reported chemical concentrations are accurate.
- Chemicals identified do not interact in a synergistic manner.
- Chemicals identified do not interact antagonistically.
- Relevant exposure pathways have been identified.
- Species exposure values under laboratory conditions are applicable to natural conditions.
- Wildlife exposure values are applicable to species of similar size and life history.
- Ingestion rates for representative species are accurate.
- The sizes of home ranges for representative species are comparable to what occurs in the field.
- Species spend equal amounts of time in every part of their home range.
- Uptake modeling is representative of actual events that occur in the field.
- The facility is used by certain wildlife species for at least some portion of their lives and that use is a reflection of the percentage of the species range composed by the area.
- The bioavailability of chemicals ingested by ecological receptors is 100 percent.

- Percentage of soil, sediment, water, and food ingested by ecological receptors is related to the percentage of time receptors spend within the Site.

These uncertainties may combine to over-estimate risks for some compounds, but may potentially underestimate risk for others.

Wildlife toxicity benchmarks are often extrapolated from other domesticated species than the receptor specie of concern. For example, the use of NOAEL-based benchmarks developed for captive ringed doves, Japanese pheasants, rats, mice, or chickens may not have a relationship to actual effects on wild mallard ducks, great blue herons, belted kingfishers, red fox, raccoons, white-tailed deer, and red-tailed hawks.

Although a benchmark screening approach is appropriate for some risk assessments, many risk assessments are not based on benchmark decisions (FR, 1996). Rather, ecological risk management decisions may depend on a more qualitative assessment of ecosystem integrity, including sustainability, resiliency, and biodiversity as observed during a field study (USEPA, 1997c). Risk assessments that rely only on quantitative evaluation of incidental soil ingestion often over predict the calculated level of risk (Tannenbaum, 2003b). In these instances, qualitative field observations may provide a better assessment of risk to plants and animals.

The plant, benthic invertebrate, and aquatic invertebrate biotransfer and bioconcentration models and assumptions employed to assess food-web bioaccumulation risks are, at best, estimates. In addition to the uncertainty associated with the models employed, the application assumptions also introduce considerable uncertainty. For example, assuming that the receptor species only forage for food in the ponds and on site; fish are present in the intermittent drainages east of the TFM Site; using the maximum concentration found in food, soils, and water; and assuming year-round exposure to contaminants all contribute uncertainty to the modeling results for risk management purposes. Species may roam on and off the TFM Site, home range boundaries may change over time, and seasonal migrations occur.

In addition, the uncertainties associated with the NOAEL-based benchmarks and EHQs are not necessarily reflective of chemical mixtures. Although an additive approach of EHQs was assumed for this ecological risk assessment, there is very limited information on the toxicity of simultaneous exposure to mixtures of contaminants. This uncertainty affects the EHIs.

Lastly, this risk assessment does not take into account any exposure of the receptor species to contaminants that might occur from off-site sources. The Collinsville Smelter is approximately 1,000 feet

to the east of the TFM Site. The cumulative effects of chemical concentrations in off-site areas adjacent to the TFM Site and the Collinsville Smelter were not factored into this risk assessment. Additional industrial facilities exist in Collinsville and in the vicinity of the TFM Site that may be contributing to risk. Wide ranging receptor species, such as red fox, raccoon, white-tailed deer, red-tailed hawk, and migratory bird species such as mallard ducks, great blue herons, and belted kingfishers may be visiting other contaminated areas in the vicinity or along migratory routes. These exposure scenarios are also not taken into account in this risk assessment.

7.6 SUMMARY

Both the on-site waste area and on-site non-waste area of the TFM Site were evaluated both qualitatively and quantitatively to assess risk to ecological receptors and the presence of completed ecological exposure pathways. Based upon observed Site conditions, it was concluded that flora and fauna could be exposed to Site-related constituents through direct contact and/or ingestion of soil, pond sediments, surface water, and fish. Similarly, it was concluded that area fauna could be exposed to Site-related constituents through the bioaccumulation of Site related constituents in benthic invertebrates, aquatic and terrestrial invertebrates, aquatic and terrestrial plants, small mammal prey, and fish. However, it was assumed that groundwater was not part of a completed pathway and animals that inhabit the Site would not be exposed to site-related constituents through direct contact and/or ingestion of groundwater.

In general, the greatest risk from exposure to COPECs was from on-site waste area soils and sediments. Surface water, regardless of source, typically resulted in the least amount of risk from exposure to COPECs. Among the four areas (i.e., on-site waste, on-site non-waste, off-site, and background) the soils, sediments, and surface water in the background area resulted in the least amount of risk from exposure to COPECs.

A comparison of the soils from the on-site waste, on-site non-waste, off-site, and background areas indicates that the detected concentrations of chemicals are greatest in the on-site waste area, relatively similar in the on-site non-waste and off-site areas (off site properties adjacent to the TFM Site), and least in the background area. Based on the results of the soil invertebrates evaluation, the risk of exposure to COPECs is greatest for soil invertebrates within the on-site waste area and least for soil invertebrates within the background area. The risk of exposure to COPECs is relatively similar for soil invertebrates within the on-site non-waste and off-site areas; however, soil invertebrates from the off-site area experience slightly more risk.

Based on the result from the evaluation of terrestrial plants, blackberry shrubs in the on-site waste area experienced a greater risk from exposure to COPECs than blackberry shrubs from the off-site and background areas. The risk from exposure to COPECs experienced by terrestrial plants from the on-site non-waste area was greater than what was experienced by blackberry shrubs from the on-site waste area; however, the risk experienced by terrestrial plants from the on-site non-waste area, which is based on maximum concentrations detected in soils from the on-site non-waste area and not sampled vegetation, may overestimate the actual risk experienced by terrestrial plants from the on-site non-waste area.

The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin (species with relatively small home ranges that likely spend all of their lives within one area), indicate that living within the on-site waste area will result in the greatest amount of risk from exposure to COPECs and living within the background area results in the least amount of risk from exposure to COPECs. The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin also indicate that the on-site non-waste area and off-site area result in less risk from exposure to COPECs than the on-site waste area. Additionally, the on-site non-waste area, in general, will result in a greater amount of risk from exposure to COPECs than the off-site area.

With the exception of the red-tailed hawk, the results of the evaluations for the red fox, raccoon, and white-tailed deer (species with relatively large home ranges that likely only spend a fraction of their time within a given area) indicate that the relatively small amount of time that is spent in either the on-site waste area or the on-site non-waste area results in a relatively smaller amount of risk from exposure to COPECs than what is experienced during time spent within the off-site area. The red-tailed hawk experiences risk from exposure to COPECs through the consumption of surface water and small mammal prey (cottontail rabbit) and by inadvertently consuming soils. The results of the evaluation for the red-tailed hawk mirror the result of the evaluation for the cottontail rabbit and indicate that the greatest amount of risk from exposure to COPECs was experienced in the on-site waste area, the next greatest amount of risk was experienced in the on-site non-waste area, the third greatest amount of risk was experienced in the off-site area, and the least amount of risk from exposure to COPECs was experienced in the background area.

In general, exposure to sediments resulted in a greater amount of risk from exposure to COPECs than exposure to surface waters. Populations of benthic invertebrates from the on-site waste area experienced a greater amount of risk from exposure to COPECs than populations of benthic invertebrates from the on-site non-waste area, off-site area, and background area. Populations of benthic invertebrates from Pond 1

of the on-site waste area experienced the greatest amount of risk from exposure to COPECs. Populations of benthic invertebrates from the drainage ditches east and west of the railroad tracks in the off-site area, which are located east and down stream from Pond 1 in on-site waste area, experienced a greater amount of risk from exposure to COPECs than benthic invertebrate populations within the Farm Pond (northwest and up stream from the TFM Site) and the intermittent drainage east of the Strip Mine Pit (located downstream of the Strip Mine Pit).

The benthic invertebrates that inhabit Strip Mine Pit experienced the least amount of risk from exposure to COPECs than all ponds and surface waters in the on-site waste area. Populations of benthic invertebrates from Pond 4 in the on-site non-waste area experienced less risk from exposure to COPECs than benthic invertebrate populations inhabiting Ponds 1 through 3 and the Mid-Site Ravine in the on-site waste area. The benthic invertebrates that inhabit Pond 5 experienced the least amount of risk from exposure to COPECs than all other ponds and surface waters of the TFM Site. Benthic invertebrate populations that inhabit the City Lake and the pond at 13908 N. 86th E. Ave. from the background area experienced the least amount of risk from exposure to COPECs.

Great blue herons from the on-site waste area experienced the most risk from exposure to COPECs from consuming sediments from the Strip Mine Pit and the least amount of risk from exposure to COPECs from consuming surface water. Similarly, Mallard ducks from the on-site waste area experienced the most risk from exposure to COPECs from consuming benthic and aquatic invertebrates and sediments and the least amount of risk from consuming aquatic plants and surface water. The belted kingfisher, which only consumed fish and surface water, experienced the least amount of risk from exposure to COPECs in the on-site waste area.

Aquatic invertebrates and aquatic plants that occur in the Mid-Site Ravine and Pond 1 of the on-site waste area and in the drainage ditches along Old U.S. Hwy 169 experienced the most risk from exposure to COPECs. Populations of aquatic invertebrates and aquatic plants that occurred in the Strip Mine Pit, Farm Pond, and City Lake, experienced the least amount of risk from exposure to COPECs because surface water samples taken from those ponds yielded no detections for arsenic, cadmium, lead, and zinc.

Fish populations within the Strip Mine Pit experienced a greater amount of risk from exposure to COPECs than fish populations within the drainage ditches along Old U.S. Hwy 169 and east of the on-site waste area. Fish populations within the intermittent drainage east of the Strip Mine Pit, Farm Pond, and City Lake experienced the least amount of risk from exposure to COPECs. This result is because the maximum concentration of arsenic, cadmium, lead, and zinc detected in tissues taken from fish within the

Strip Mine Pit is greater than the maximum concentrations detected in the surface water of the Strip Mine Pit or other surface waters from the off-site and background areas.

The raccoon is an omnivore that forages and hunts for food within terrestrial and aquatic environments. For the purposes of this evaluation, raccoon were evaluated separately because they occupy both the terrestrial and aquatic habitats. The amount of risk from exposure to COPECs that a raccoon is exposed to is based on maximum concentrations detected in surface water, sediments, soils, and vegetation sampled and the modeled uptake concentration calculated for benthic invertebrates, soil invertebrates, fish, and small mammals from each area and terrestrial plants from the on-site non-waste area where no vegetation was sampled. As indicated previously, raccoon from the off-site area experienced more risk from exposure to COPECs than raccoon from the on-site non-waste and on-site waste areas because of the relative amount of time that a raccoon spends within each area (on-site waste, on-site non-waste, and off-site) within its assumed home range. In general, raccoons experienced the most risk from exposure to COPECs from consuming benthic invertebrates, soil invertebrates, soils, and sediments and the least amount of risk from consuming fish, small mammals, terrestrial plants, and surface water.

Snakes, lizards, box turtles, and painted turtles that occupy the TFM Site are likely experiencing some site-related risk. These species potentially consume and come in contact with soils, terrestrial plants, surface water, aquatic plants, or pond sediments at the TFM Site. The surrogate for insectivorous lizards and toads, the insectivorous short-tailed shrew, had higher rates of soil ingestion and experienced greater risk than did other representative species. The surrogate for the box turtle, the omnivorous meadow vole, also experienced significant risk due to consuming soils and soil invertebrates within the TFM Site. These reptile species and their surrogates burrow in the ground and consume prey that lives in soils. Among the surrogates for the painted turtle (the omnivorous mallard duck and piscivorous belted kingfisher) the mallard duck experienced greater risk from exposure to COPECs than did the belted kingfisher. The majority of the risk experienced by the mallard duck resulted from exposure to pond sediments. However, this evaluation may over-predict the risk because it was assumed that the diets and rates of consumption of reptiles, terrestrial mammals, and aquatic birds were similar or comparable even though avian and mammalian receptors have different metabolisms than reptiles.

Secondary exposures to potential receptors may result from the bioaccumulation and bioconcentration of chemicals through the food chain. The mallard duck, great blue heron, belted kingfisher, red fox, red-tailed hawk and other species near the top of the food chain are potentially the most vulnerable to effects of bioaccumulation.

In general, inorganic arsenic compounds are more toxic than organic arsenic compounds whereas organic lead compounds were more toxic than inorganic lead compounds. Arsenic poisoning in wildlife is rare and there is no evidence of magnification along the aquatic food chain because most of the ingested arsenic is rapidly excreted in the urine within the first few days of exposure (Eisler, 1988a). Cadmium, which is also excreted primarily in urine and feces, tends to increase in concentration with age of the organism and may eventually act as a cumulative poison (Eisler, 1985). Lead is also bioconcentrated by organisms with concentrations increasing as the organism ages, localizing in hard tissues such as bone and teeth (Eisler, 1988b). Biomagnification of Arsenic, cadmium, and lead through the food chain is negligible (Eisler, 1985, 1988a, and 1988b). Zinc is a nutritionally important essential trace element but may biomagnify up the food chain and may cause problems in aquatic systems (Eisler, 1993). Ingestion of zinc at recommended levels is beneficial to the health of an animal. Ingestion of zinc at high levels may lead to systemic toxicity; however, the levels required to induce toxic effects are unlikely to be obtained through exposure to environmental media.

* * * * *

8.0 SUMMARY AND CONCLUSIONS

The purpose of this RI Report is to document the evaluation of current conditions as they pertain to potential threats to human health and the environment associated with the TFM Site, Collinsville, Oklahoma. Included within this report are characterization of the nature and extent of contamination, an evaluation of the fate and transport of contaminants, and human health and ecological risk assessments.

8.1 SUMMARY

The RI/FS was conducted under contract with DEQ and was 100% federally funded through a Cooperative Agreement between DEQ and the USEPA. The RI/FS was performed in accordance with CERCLA and the NCP, and followed the *USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (RI/FS Guidance, 1988), the *Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual (Parts A and D)* (USEPA, 1989 and 2001), as well as all other applicable regulations and requirements.

The RI was conducted to determine the nature and extent of on-site contamination, the nature and extent of potential off-site contamination, and to assess the potential risks to human health and the environment caused by such contamination. To accomplish these goals samples were collected from apparent waste deposition areas, soils surrounding the TFM, on-site and off-site surface water and sediment, vegetation, and air. The RI activities were conducted in two phases (Phase I and Phase II).

Phase I field activities were conducted from July 11 through October 4, 2005, and included collection of the following data: 1) on-site surface soil, subsurface soil, and waste samples; 2) off-site surface soil samples; 3) on-site and off-site surface water and sediment samples; 4) groundwater samples; 5) ecological/vegetation samples; and 6) air quality samples. During Phase I, several of the planned surface water sampling locations were dry, making it difficult to obtain sufficient groundwater samples from the monitoring wells to collect all planned analyses. These surface water locations and monitoring wells were revisited during the rainy season from May 8 through 12, 2006 for purposes of finalizing the RI Phase I data collection effort. The RI/FS PI Data Report (BMcD, 2006) compiled and tabulated all the sampling data obtained during the Phase I and May 2006 field activities.

After review of the Phase I RI data, it was determined that additional RI sampling was necessary to further define the nature and extent of contamination, and this sampling was outlined in the RI/FS PI Data Report (BMcD, 2006). Phase II field activities were conducted from August 14 through September 21, 2005, and included collection of the following data: 1) on-site surface soil and subsurface soil; 2) off-site

surface soil samples; 3) on-site and off-site surface water and sediment samples; 4) groundwater samples; 5) ecological/vegetation samples; and 6) Investigative derived waste (IDW) samples.

Primary analytical services for the RI/FS were provided by the Oklahoma SEL, which analyzed soil, sediment, and water matrices for metals, TCLP metals, and general water chemistry parameters. BMcD subcontracted STL Burlington for analysis of the ecological/vegetation and air samples. In addition, DEQ contracted Quantum Laboratories of Oklahoma City, Oklahoma to provide asbestos analysis for one sample collected near the former smokestack.

8.1.1 Nature and Extent

Phase I and Phase II RI field activities were conducted to evaluate the nature and extent of contamination in soil, surface water, sediment, groundwater, vegetation, and air media at the TFM and at selected off-site properties. The discussion is organized based upon the media type and area sampled.

- On-Site Soil and Waste
- Off-Site Surface Soil
- Surface Water and Sediment, both on-site and off-site
- Groundwater
- Ecological/Vegetation Samples
- Air

Laboratory analytical results for samples collected during the Phase I and Phase II RI field activities were compared to background levels as well as all applicable USEPA Region VI screening levels and/or Oklahoma water quality criteria.

8.1.1.1 Background Results

Background sampling was conducted at upgradient or off-Site locations to obtain information on the naturally occurring chemistry of each media sampled for comparison to concentrations in the potential source areas. A total of 14 surface soil samples, 14 subsurface soil samples, one groundwater sample (Monitoring Well MW-1), 2 surface water samples, 2 sediment samples, and one air quality sample were collected during Phase I and Phase II RI field activities for comparison to background conditions. Results of the background sampling are summarized as follows:

- Surface soil – Arsenic, lead, and zinc were detected the background surface soil samples.
- Subsurface soil – Arsenic, lead, and zinc were detected in the background subsurface soil samples.
- Surface Water - Arsenic, cadmium, lead, and zinc were not detected in the background surface water samples.
- Sediment - Zinc was detected in the background sediment samples.
- Groundwater - Zinc was detected in the background groundwater sample.
- Ecological/Vegetation - Zinc was detected in the washed and unwashed background blackberry samples. Arsenic, lead, and zinc were detected in washed or unwashed leaves from the background blackberry bushes. Arsenic, lead, and zinc were detected in washed roots from the background blackberry bushes. Arsenic, lead, and zinc were detected in the soil around the background blackberry bushes.
- Air - Arsenic and lead were detected in the background air sample.

Analyte detections were used to develop background concentrations for each media sampled for comparison to on-Site sample results. For surface soil and subsurface soil the 95 percent UCL of the arithmetic mean of the soil concentration was used as the background value. The ranges for the surface water and sediment background values were used for data comparison. Since only one background groundwater, ecological/vegetation and air sample was collected, the background values utilized were the actual analyte detections, where applicable.

8.1.1.2 On-Site Soil and Waste

Surface and subsurface soil samples were collected on-site to determine the horizontal and vertical extent of metals contamination. Review of the on-site soil and waste area was divided into two areas: 1) areas of the TFM site where waste materials were not visually observed during sample collection or in the boring logs (i.e. on-site non-waste areas), and 2) areas of the TFM site where waste materials were visually observed during sample collection or in the boring logs (i.e., on-site waste areas). Soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed

in 40 CFR 261.24. The nature and extent of contamination of surface and subsurface soil in the on-site waste and on-site non-waste areas is summarized in the following paragraphs.

8.1.1.2.1 On-Site Non-Waste Area Soil

The on-site non-waste area is approximately 36 acres and is shown with a white background on Figure 4-2. Sample results for on-site non-waste area soil samples are presented on Tables 4-9 and 4-10. Approximately 25 acres of the non-waste area contains soil samples with lead results in excess of the 400 mg/kg residential screening level in the 0 to 0.5 ft bgs interval. Horizontally, the highest concentrations of metals in the non-waste area were observed south and west of the access road/driveway. Maximum concentrations in this area were 416 mg/kg of arsenic, 799 mg/kg of cadmium, 5,170 mg/kg of lead, and 41,400 mg/kg of zinc. Concentrations of metals in samples collected nearest the northern and eastern TFM boundaries in the non-waste area exhibited the lowest on-site metal concentrations, and the horizontal extent of metals was established in this area. The horizontal extent of metals in the non-waste area was less clearly defined along the western TFM boundary, and samples collected from the properties directly west of the TFM exhibited concentrations of lead that exceeded the residential soil screening value. Sampling conducted on these properties defined the western extent of contamination relative to the TFM site.

Metal concentrations decrease as sample depth increases. The on-site contamination in the non-waste area is primarily located in the top 0 to 0.5 ft of soil, with small areas in the vicinity of sampling locations SP-19, SP-26, and SP-29, near the access/road driveway and waste area, exhibiting lead results in excess of the residential screening level up to 2 ft bgs. Very few exceedences of screening levels were noted in samples collected below 2 ft bgs, and these results were similar to background concentrations.

The sample collected from the 0 to 0.5 ft bgs interval at location SP-36 exhibited results for TCLP cadmium that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure soil at this location would be classified as hazardous. This was the only location in the non-waste area that exhibited a TCLP failure.

8.1.1.2.2 On-Site Waste Area Samples

The on-site waste area is approximately 25 acres and is shown with a tan background on Figure 4-2. Smelter waste materials (slag, broken retorts, etc.) were visually observed at the ground surface or within trenches or soil borings placed in this area. The waste area also includes the access road/driveway, which was constructed of smelter waste materials. Sample results for on-site non-waste area soil samples are presented on Tables 4-11 and 4-12. The entire waste area contains soil samples with lead results in

excess of the 400 mg/kg residential screening level in the 0 to 0.5 ft bgs interval. Horizontally, the highest concentrations of metals in the waste area were observed south and southwest portion of the TFM and were associated with the former smelter operations area. Maximum concentrations in this area were 1,170 mg/kg of arsenic, 1,620 mg/kg of cadmium, 71,700 mg/kg of lead, and 165,000 mg/kg of zinc. The horizontal extent of contamination in the waste area was defined to the north and west by soil borings placed in the non-waste area. The southern extent of the waste area was defined at the Strip Mine Pit, and waste slag piles were observed to have collapsed into the Strip Mine Pit. Soil samples collected off-site south of the Strip Mine Pit did not exhibit elevated metals results (See Figure 4-3). The eastern edge of the waste area was noted at the property boundary; however, waste materials were noted outside of the fenceline in a low area between the TFM boundary and the Atchinson Topeka Santa Fe Railroad right-of-way (See results for locations OSL-100 and OSL-101 on Table 4-13). The railroad, which was constructed in 1899 prior to operation of the smelter, acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks.

Metal concentrations decrease as sample depth increases. The vertical extent of contamination varied across the waste area. On the west side of Pond 3 near the on-site residence, waste was generally encountered to approximately 1 ft bgs. Across much of the waste area, waste materials varied in thickness between 2 to 3 ft bgs. Waste materials were observed up to 5 ft deep in the area between Pond 1 and Pond 2 and the area between Pond 2 and Pond 3. In addition, waste materials were observed up to 7 ft bgs across the length of the former smelter operations area. Very few exceedences of screening levels were noted in samples collected below the waste materials from native clay material. In many cases these results were similar to background concentrations. A summary of the vertical extent of contamination is provided in the following table.

Vertical Extent of Waste Materials			
Approximate Waste Thickness	Percentage of Waste Area	Impacted Area in Acres (Does not Include Ponds)	Volume in Cubic Yards
1 ft thick	10%	2.3	3,700
2 ft thick	50%	11.5	37,100
3 ft thick	15%	3.45	16,700
6 ft thick	25%	5.75	55,700

All samples collected from areas and depth intervals where waste material was observed exhibited results for TCLP cadmium or TCLP lead that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure, soil and waste materials at these locations would be classified as hazardous. Neither of the samples collected from native materials beneath the waste exhibited soil results that failed the TCLP screening criteria.

8.1.1.3 Off-Site Surface Soil

Surface soil samples were collected from off-site locations to determine the presence and extent of contamination due to potential aerial distribution of contaminants from the TFM smokestack and historical placement. At a minimum, off-site surface soil samples were collected from 0 to 3 inches bgs. A shallower depth interval was selected for the off-site surface samples as compared to the on-site samples to avoid overly diluting disperse aerial deposition. That is, the probability of emissions from the TFM smokestack being present below 3 inches bgs was expected to be minimal given the smelter's limited years of operation. At locations where the residential screening level for lead was exceeded in the 0 to 3 inch interval, additional samples were collected from 3 inches to 12 inches bgs to characterize the vertical extent of metals. When possible, sample locations were not placed adjacent to buildings, roadways, or railroad sidings to minimize the likelihood of non-smelter materials (i.e., leaded paint, leaded gas, etc.) affecting results.

A visual survey was also conducted of the Collinsville area to identify areas of historical placement. This survey was conducted using information provided by participants in local public meetings regarding former smelter operations in the Collinsville area. In addition, the field crew visually surveyed the Collinsville area and talked to residents while obtaining access agreements for off-site sampling.

Off-site surface soil results for arsenic, cadmium, lead, and zinc are presented on Table 4-13. Results for the TCLP analysis performed on samples from selected off-site locations are presented on Table 4-14. Tables 4-13 and 4-14 are organized by property location or owner so that samples collected from the same property can be evaluated together. Soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24. Lead results for samples collected from the 0 to 3 inch bgs interval are provided on Figure 4-3.

For purposes of discussion, the off-site soil sample results were organized as follows: 1) review for potential aerial deposition and historical placement using off-site grid and "distance" sampling locations (sample ID "OSL-"); 2) targeted sampling locations (sample ID "TSL-"); 3) tribal member properties (sample ID "TRB-"); and 4) properties with lead results in excess of USEPA Region VI residential soil screening level.

8.1.1.3.1 Aerial Deposition and Historical Placement – Off-Site Surface Soil Review

Samples were collected from properties in the area immediately surrounding the TFM site and from properties at distances up to 1 ½ miles from the site (i.e., sample ID “OSL-”). Approximately 111 samples, including duplicates, were collected and submitted for lab analysis.

Lead results for sample collected from the 0 to 3 inch bgs interval are provided on Figure 4-3, and distances approximately ½ mile, 1 mile, and 1 ½ miles from the former smokestack location are also shown. The data do not suggest an aerial dispersion plume from the TFM that resulted in widespread contamination. However, it was noted that properties greater than 1 mile from the TFM site exhibited the lowest concentrations of metals. Several properties immediately adjacent to the TFM exhibited metals results in excess of screening values, and the presence of smelter waste materials was typically visually observed at these locations. None of the TCLP metal results exceeded screening criteria.

8.1.1.3.2 Targeted Sampling Locations

A survey of the Collinsville area was performed to identify high-interest sampling locations such as parks, schools, play grounds, day care centers, etc. as targeted sampling locations (i.e., sample ID “TSL-”).

Locations targeted for sampling included: 1) TSL-01 – Wilson Elementary School; 2) TSL-02 – Middle School; 3) TSL-03 – Pioneer Park; 4) TSL-04 – City Park; 5) TSL-05 – Faith Assembly Church (directly north of the TFM site); 6) TSL-06 and TSL-07 – (b) (6), placed to verify results from *Collinsville Smelter Focused RI Report* (Exponent, 2001); and 7) TSL-09 – (b) (6)

(b) (6) placed at the request of property owner. Results for TSL-05, TSL-06, and TSL-07 are presented in Section 8.1.1.3.4, which presents discussion of properties with lead results in excess of residential screening levels. While exceedence of background values were noted for samples collected from TSL-01 through TSL-04 and TSL-09, concentrations were less than human health screening values for cadmium, lead, and zinc. No exceedences of the toxicity characteristic maximum concentrations listed in 40 CFR 261.24 were noted in the sample analyzed from location TSL-04.

8.1.1.3.3 Tribal Member Properties

Based on information provided by the ITEC, surface soil samples were collected from tribal residence locations that were located in the vicinity of the TFM. Surface soil samples were collected from six tribal residence locations (i.e., sample ID “TRB-”), and samples were labeled TRB-01, TRB-04, and TRB-08 through TRB-11.

Results for TRB-08 through TRB-10 are presented in Section 8.1.1.3.4, which presents discussion of properties with lead results in excess of residential screening levels. Arsenic and cadmium were not detected in samples collected from locations TRB-01, TRB-04, or TRB-11. Lead was detected in the samples collected from TRB-01 and TRB-04, and these concentrations exceeded the background concentration and the USEPA Region VI ecological screening value. Zinc was detected at all three locations, and zinc concentrations for samples collected from TRB-01 and TRB-04 exceeded the background concentration and the USEPA Region VI ecological screening value. Lead and zinc concentrations were less than human health screening values.

8.1.1.3.4 Off-Site Samples Exhibiting Lead Greater than Residential Screening Values

During off-site soil surface soil sampling in RI Phase I, samples collected from 11 off-site locations exhibited lead results in excess of residential screening levels. Additional samples were collected from these properties during RI Phase II to better determine the horizontal and vertical extent of contamination. At least one sample collected from the following properties exhibited a lead result in excess of residential screening levels:

- Right-of-Way/Ditches adjacent to TFM and associated with Old US Hwy 169 and the railroad
- [REDACTED] (b) (6) [REDACTED]
- (b) (6) [REDACTED]
- Faith Assembly Church, directly north of the TFM site
- [REDACTED] (b) (6) [REDACTED], directly west of the TFM site
- [REDACTED] (b) (6) [REDACTED], directly west of the TFM site
- [REDACTED] (b) (6) [REDACTED]
- [REDACTED] (b) (6) [REDACTED]
- [REDACTED] (b) (6) [REDACTED]
- [REDACTED] (b) (6) [REDACTED]
- (b) (6) [REDACTED]

Right-of-Way/Ditches Old US Hwy 169 and Atchinson Topeka Santa Fe Railroad Adjacent to TFM

Samples collected from locations OSL-100 and OSL-101, which were immediately adjacent to the TFM site between the site and the railroad tracks, contained the highest concentrations of metals (i.e., lead results in excess of 3,000 mg/kg and zinc results in excess of 14,000 mg/kg). Exceedences of screening levels were noted in both the 0 to 3 ft bgs and 3 to 12 ft bgs intervals at these locations. Smelter materials were observed east of the on-site waste area between the TFM property boundary and the railroad right-of-way in this corridor. It appeared that waste materials have either collapsed from piles located on-site into this corridor or were intentionally placed in the area for bank stabilization. The railroad, which was constructed in 1899 prior to operation of smelters in Collinsville, appears to have acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks. Samples collected from locations OSL-102 and OSL-103 on the opposite side of the railroad tracks between the tracks and Old US Hwy 169 support this assumption since these samples exhibited metals results much lower than samples collected adjacent to the TFM (i.e., lead results from 58 to 569 mg/kg and zinc results from 327 to 973 mg/kg).

During off-site sampling collection, materials that appeared to be smelter waste were observed immediately north of the TFM site between S 12th Street and the railroad tracks (See photograph in Appendix G). Sample OSL-16/SS01 was collected from these materials, and this sample exhibited elevated metals results (i.e., lead at 2,580 mg/kg and zinc at 6,460 mg/kg). Sampling was not pursued further along this corridor due to inability to obtain appropriate access agreements.

(b) (6)

Samples were collected from a property at (b) (6), and these locations were labeled with the prefix "OSL-96" as shown on Figure 4-3a. This property was in the vicinity of a retort embankment noted at (b) (6) (See Appendix G). Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at OSL-96 and both depth intervals at location OSL-96D, which was placed south of the original sample location.

With the exception of the lead results for OSL-96 and OSL-96D, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and two arsenic results exceeded ecological screening levels. Additional sampling was not conducted surrounding OSL-96D, which exhibited the highest metals concentration, due to lack of available access at surrounding properties. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-96D/SS01.

████ (b) (6) ██████████
Samples were collected on and around the property ██████████ (b) (6) ██████████, and two locations at an adjacent property at (b) (6) ██████████ were also sampled. These locations were labeled with the prefix “OSL-97” and are shown on Figure 4-3a. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at OSL-97E, which was placed east of location OSL-97B. Lead also exceeded residential screening levels for the duplicate sample (OSL-1012/SS02) but not the primary sample (OSL-97F/SS02) collected from the 3 to 12 inch depth interval at location OSL-97F.

With the exception of the lead results for Samples OSL-97E/SS01 and OSL-1012/SS02, the cadmium, lead, and zinc results only exceeded background concentrations and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and two arsenic results exceeded ecological screening levels. In general, samples collected from the 3 to 12 inch bgs interval exhibited lower concentrations of metals than the samples collected from the 0 to 3 inch bgs interval. Additional sampling was not conducted surrounding locations OSL-97E and OSL-97F, which exhibited the highest metals concentration, due to lack of available access at surrounding properties. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-97C/SS02.

Faith Assembly Church

Samples were collected from Faith Assembly Church property, which is adjacent to the northern boundary of the TFM, and these locations were labeled with the prefix “TSL-05.” In addition, samples were also collected from location OSL-34 and OSL-35 on the Faith Assembly Church property (See Figure 4-3b). Lead exceeded the residential screening level in a sample collected from the 0 to 3 inch bgs interval at TSL-05. Lead also exceeded residential screening levels a sample collected from the 0 to 3 inch bgs interval at location TSL-05D, which was placed on the property boundary between the TFM site and Faith Assembly Church.

With the exception the previously discussed lead results for TSL-05 and TSL-05D, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. The highest level of metals was noted at location TSL-05D, which was immediately adjacent to the TFM site. In addition, metals concentrations were lower in samples collected from the 3 to 12 inch bgs interval than samples collected from the 0 to 3 inch interval. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TSL-05A/SS02.

(b) (6)

Samples were collected from the property at (b) (6), which is adjacent to the northwest boundary of the TFM, and these locations were labeled with the prefixes “OSL-36” through “OSL-39” as shown on Figure 4-3b. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-36, OSL-36E, OSL-39, OSL-39D, and OSL-39E. Lead also exceeded residential screening levels from the 3 to 12 inch bgs interval at location OSL-39B.

Due to the possibility of construction using smelter waste materials, a sample was collected from the driveway on this property. Zinc was the only metal detected in this sample, and it was concluded that this driveway was not constructed using smelter waste.

The highest level of metals were noted at locations OSL-39, OSL-39B, OSL-39D, and OSL-39E, which were adjacent to the TFM site. In this area, the extent of contamination was defined by location OSL-38 to the west. Since the TFM site was directly south and east of these locations, it was assumed that metals concentrations would not decrease with closer proximity to the TFM site. In general, metals concentrations were lower in the 3 to 12 inch bgs interval. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-36C/SS01, OSL-39/SS01, and OSL-39E/SS01.

(b) (6)

Samples were collected from the property at (b) (6) Street N, which is adjacent to the southwest boundary of the TFM, and these locations were labeled with the prefixes “OSL-48” through “OSL-50” as shown on Figure 4-3b. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-49, OSL-49C, and OSL-49D.

Smelter waste materials were noted at locations OSL-49/OSL-49A, OSL-49C, and OSL-49E. Samples collected from location OSL-49C, which was immediately adjacent to the TFM, exhibited the highest concentrations of metals. In this area, the extent of contamination was defined by location OSL-49B to the north, OSL-49DD to the south, and OSL-49EE to the west. Since the TFM site was directly east of the OSL-49 area, it was assumed that metals concentrations would not decrease with closer proximity to the TFM site. Elevated metals were limited to the 0 to 3 inch bgs interval.

Samples collected from locations OSL-48 and OSL-50 exhibited the lowest concentration of metals in the 0 to 3 inch bgs interval. These locations provide both the horizontal and vertical extent of metals in the southern part of this property. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-49D/SS01 and OSL-50/SS01.

██████ (b) (6) ██████

Samples were collected from the property at ██████ (b) (6) ██████, which is north of the TFM site at the corner of (b) (6) ██████. These locations were labeled with the prefix “TRB-09” as shown on Figure 4-3c. With the exception of the sample collected from the 0 to 3 inch interval at location TRB-09E, lead exceeded the residential screening level in samples collected from this property. These exceedences ranged from 400 to 472 mg/kg for all samples except the one collected from the driveway. Concentrations of arsenic, cadmium, lead, and zinc were consistent across these sampling locations and both depth intervals, and exceedences of residential screening levels were noted for arsenic and lead. Since samples were collected in the southeast corner of the property, it was assumed that exceedences were present to the property line. Sample collection was not pursued for locations east of S (b) (6) ██████ or south of (b) (6) ██████. The western extent of elevated metals was defined at location TRB-08E on the property at ██████ (b) (6) ██████. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TRB-09B/SS01.

Due to the possibility of construction using smelter waste materials, a sample was collected from the driveway on this property. Concentrations of metals in the sample were similar to metal concentrations observed in samples collected from the waste area on the TFM site, and it was concluded that this driveway was constructed using smelter waste.

██████ (b) (6) ██████

Samples were collected from the property at ██████ (b) (6) ██████ directly west of the property at (b) (6) ██████. These locations were labeled with the prefix “TRB-08” as shown on Figure 4-3c. Samples collected from both depth intervals at location TRB-08 and TRB-08C exhibited lead results that exceeded the residential screening level.

Sampling locations were along the southern boundary of this property. Samples collected from both depth intervals at locations TRB-08/TRB-08A and TRB-08C exhibited the highest concentrations of metals. Materials that appeared to be smelter waste were observed in the vicinity of location TRB-08/TRB-08A. The northern extent of elevated metals was defined at location TRB-08B, and the western extent of elevated metals was defined at location TRB-08E. Elevated metals were also noted east of this property on the property at ██████ (b) (6) ██████. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample TRB-08B/SS01 or its duplicate sample.

██████████ (b) (6) ██████████

Samples were collected from the property at ██████████ (b) (6) ██████████, and these locations were labeled with the prefix “TRB-10.” In addition, samples were also collected from locations OSL-68 and OSL-69 on this property as shown on Figure 4-3d. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at TRB-10, and this exceedence was also noted in the duplicate sample. Lead also exceeded residential screening levels for the primary sample (TRB-10E/SS02) but not the duplicate sample (TRB-1003/SS02) collected from the 3 to 12 inch depth interval at location TRB-10E. Lastly, lead exceeded residential screening levels for the sample collected from the 3 to 12 inch interval at location TRB-10D.

With the exception of the previously discussed lead results, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. Exceedences were generally noted in the sample collected on the western side of the property closest to Old US Hwy 169 and the TFM site. Samples collected north and east of location TRB-10 did not exhibit exceedences of the residential lead screening level. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples TRB-10/SS01, TRB-10A/SS01, and OSL-69/SS01.

██████████ (b) (6) ██████████

Samples were collected from the property at ██████████ (b) (6) ██████████ and these locations were labeled with the prefix “OSL-12” as shown on Figure 4-3e. The only lead exceedence was at location OSL-12 in the 0 to 3 inch bgs interval. Samples collected immediately surrounding OSL-12 provided delineation of the horizontal extent of contamination. In addition, the sample collected from the 3 to 12 inch interval (Sample ID OSL-12A/SS02) at location OSL-12 also contained lead below residential screening levels and provided the vertical extent of contamination.

With the exception of the lead result for Sample OSL-12/SS01, the cadmium, lead, and zinc results only exceeded background concentration and the ecological screening levels, and results in excess of the human health screening levels were not noted. Arsenic detections exceeded both background and human health screening levels, and one of the arsenic results exceeded ecological screening levels. In general, samples collected from the 3 to 12 inch bgs interval exhibited lower concentrations of metals than the samples collected from the 0 to 3 inch bgs interval. No exceedences of the toxicity characteristic maximum concentrations were noted for Samples OSL-12/SS01 or OSL-12E/SS02.

(b) (6)

Samples were collected from (b) (6), which is directly east of the TFM across the Atchinson Topeka Santa Fe Railroad and Old US Hwy 169. This property includes portions of the former Bartlesville Zinc Company smelter site, also known as the Collinsville Smelter Site. Extensive sampling has been previously conducted in this area as part of the evaluation of the Collinsville Smelter Site (Exponent, 2001). The sampling locations placed on (b) (6) are shown on Figure 4-3f. Lead exceeded the residential screening level in samples collected from the 0 to 3 inch bgs interval at locations OSL-40, OSL-40C, OSL-40CCC, OSL-40D, and OSL-40DD.

Smelter waste materials were noted at locations OSL-40C, OSL-40CC, OSL-40CCC, and OSL-40D. Samples collected from this area exhibited the highest concentration of metals. Samples collected from locations south of the OSL-40 cluster exhibited lower metals results and few exceedences of screening levels. Since the area around location OSL-40 has been previously characterized as part of the Collinsville Smelter Site Focused RI (Exponent, 2001), additional sampling was not conducted in this area. However, it was noted that the contamination appeared limited to the 0 to 3 inch bgs interval in the area. It is likely that the railroad, which was constructed in 1899 prior to operation of the TFM and Collinsville smelters, acted as a natural barrier to retain TFM or Collinsville Smelter waste materials to their respective side of the railroad tracks. No exceedences of the toxicity characteristic maximum concentrations were noted for Sample OSL-40D/SS01, which exhibited the highest total lead concentration.

8.1.1.4 Surface Water and Sediment Contamination

Surface water and sediment samples were collected to assess the potential of waste migration to the surrounding streams, ponds, and strip mine pit. Samples were collected at locations where surficial transport of contaminants might have occurred. Samples were analyzed for arsenic, cadmium, lead, and zinc. In addition, surface water samples were analyzed for the general chemistry parameters of TOC, COD, alkalinity, chloride, nitrate/nitrite as nitrogen, and sulfate. Results for lead and zinc in surface water are presented on Figure 4-4, and results for lead in sediment are provided on Figure 4-5.

Surface water results were compared to the following screening levels: USEPA Region VI screening levels for chronic exposure of ecological freshwater receptors, Oklahoma Water Quality Criteria screening levels for fish and wildlife propagation for acute and chronic exposures, and Oklahoma Water Quality Criteria screening levels for human health protection based on combined water and fish consumption and only fish consumption. In addition, sediment sample results were compared to the

following screening levels: USEPA Region VI screening levels for ecological receptors, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24.

8.1.1.4.1 TFM Pond 1 Surface Water and Sediment

Metals were not detected in the surface water samples that were collected from three locations in Pond 1 in July 2005. Samples collected from location PD1-02 exhibited detections of cadmium, lead, and zinc for samples collected in September 2005 and May 2006. The cadmium, lead, and zinc detections noted in the samples collected from location PD1-02 in September 2005 and May 2006 exceeded multiple screening levels.

One or more metals exhibited concentrations that exceeded each of the applicable screening levels. Metal concentrations for sediment samples collected from TFM Pond 1 were also greater than both background sampling locations and the adjacent Farm Pond. Samples with metal results in excess of industrial outdoor worker and residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval across Pond 1. No exceedences of the toxicity characteristic maximum concentrations were noted.

8.1.1.4.2 TFM Pond 2 Surface Water and Sediment

Surface water was collected from two locations within TFM Pond 2 in July 2005. Samples collected from both locations exhibited detections of cadmium, lead, and zinc, and these detections exceeded multiple screening levels. Metals results for both locations exceeded the surface water results for both background locations and the adjacent Farm Pond.

Sediment samples were collected from two locations in TFM Pond 2. One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from TFM Pond 2 were greater than both background sampling locations and the adjacent Farm Pond. Samples with metal results in excess of industrial outdoor worker and residential soil screening levels were encountered in the 0 to 0.5 ft bgs interval in both samples collected from Pond 2.

8.1.1.4.3 TFM Pond 3 Surface Water and Sediment

Surface water was collected from two locations within TFM Pond 3. Arsenic was not detected. Cadmium, lead, and zinc were detected only in the duplicate sample, and not the primary sample. These detections are potentially related to disturbance of pond sediment and increased turbidity of the duplicate sample as compared to the primary sample.

Sediment samples were collected from two locations in TFM Pond 3. One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from TFM Pond 3 were greater than both background sampling locations and the adjacent Farm Pond. A retort embankment was observed at Pond 3 during RI activities with retorts observed on the interior and exterior of the pond.

8.1.1.4.4 TFM Pond 4 Surface Water and Sediment

Surface water was collected from one location within TFM Pond 4. Arsenic and lead were not detected. Cadmium and zinc were detected at concentrations that exceeded one or more screening levels. Based on observations during RI activities, Pond 4 is likely only present for brief periods following rain events.

One or more of the metals in the sediment sample exhibited concentrations that exceeded each of the applicable screening levels. In addition, the metal concentrations for sediment samples collected from TFM Pond 4 were greater than both background sampling locations and the adjacent Farm Pond.

8.1.1.4.5 TFM Pond 5 Surface Water and Sediment

Surface water was collected from one location within TFM Pond 5. Arsenic, cadmium, and lead were not detected. Zinc was detected at a concentration that exceeded one or more screening levels. Based on observations during RI activities, Pond 5 is likely only present for brief periods following rain events.

Lead and zinc were the only metals detected in the sediment sample collected from Pond 5. These detections exceeded ecological screening levels. Lead and zinc concentrations for this sediment sample were greater than both background sampling locations and the adjacent Farm Pond.

8.1.1.4.6 TFM Mid-Site Ravine and Cistern Surface Water and Sediment

Surface water was collected from three locations along the mid-site ravine that transverses TFM site and from a cistern located adjacent to the mid-site ravine. Zinc was the only metal detected in the water sample from the cistern. Cadmium, lead, and zinc were detected in surface water samples collected from the mid-site ravine, and these detections exceeded multiple screening levels.

Sediment was not present in the cistern, and a sample could not be collected at that location. One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels in sediment samples collected from the Mid-Site Ravine. The metal concentrations for sediment samples collected from the Mid-Site Ravine were greater than both background sampling locations and the adjacent Farm Pond. The ravine cuts through the former operations area for the smelter and waste materials were observed in the ravine.

8.1.1.4.7 Strip Mine Pit Surface Water and Sediment

Surface water was collected from six locations in the Strip Mine Pit. Arsenic, cadmium, lead, and zinc were not detected in surface water samples collected from the Strip Mine Pit.

The Strip Mine Pit borders the southern edge of the TFM site, and waste piles were observed to have collapsed into the water body. Locations SMP-02 through SMP-05 were closest to the waste piles and exhibited the highest metals concentrations. One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. The metal concentrations for sediment samples collected from the Strip Mine Pit were greater than both background sampling locations and the adjacent Farm Pond. No exceedences of the toxicity characteristic maximum concentrations were noted.

8.1.1.4.8 Ditches/Drainages of Old US Hwy 169 and Railroad Surface Water and Sediment

Surface water was collected from nine locations along ditches and drainages associated with the eastern border of the TFM and right-of-way of Old US Hwy 169. Water is generally only present in these ditches following rain events. Arsenic was detected in the sample collected from location OFF-18. Cadmium was detected in the samples collected from locations OFF-10 and OFF-16. Lead was detected in the samples collected from four locations. Zinc was detected in all of the surface water samples.

For the sediment samples, one or more of the metals exhibited concentrations that exceeded each of the applicable screening levels. The metal concentrations for these sediment samples were also greater than both background sampling locations and the adjacent Farm Pond. TCLP metals analysis was also performed for the sample collected from location OFF-10, and the results for cadmium exceeded the toxicity characteristic maximum concentration. Location OFF-10 was located near the outlet of TFM Pond 1 and adjacent to the driveway entering the Site. Location OFF-16 was placed on the opposite side of the driveway and exhibited similar metals concentrations as OFF-10. Downstream locations OFF-17 and OFF-18 exhibited metals concentrations lower than the upstream samples (See Figure 4-5).

8.1.1.4.9 Northern Drainage on (b) (6) Surface Water and Sediment

Surface water was collected from eight locations associated with the northern drainage on Tulsa County (b) (6) portions of which include property associated with the former Bartelsville Zinc Company. With the exception of a turbid sample collected from location OFF-09 in July 2005, arsenic was not detected in the surface water samples. Cadmium and zinc were detected in all of the surface water samples. Lead was detected in samples collected from locations nearest the TFM,

but was not detected in locations that were further downstream. Metals results for location OFF-09 were lower in the sample collected in May 2006 relative to the sample collected in July 2005. The difference is likely due to the turbid nature of the July 2005 sample.

A culvert passes under the Atchinson Topeka Santa Fe Railroad and Old US Hwy 169, and surface water from the TFM passes through this culvert and onto a ponded area on (b) (6). Location OFF-05 represents the most upstream location closest to the culvert. Northern flow from this ponded area was observed during a rain event in May 2006. The northern drainage on (b) (6) extends approximately 1,500 ft from the culvert passing from the TFM site to the northernmost point of the drainage. With the exception of surface water samples collected from location OFF-15, results tended to decrease the further downstream from the culvert. Field notes indicate that smelter waste materials were observed at OFF-15 beneath the sediment and may have caused the elevated surface water results.

One or more of the metals exhibited concentrations that exceeded each of the applicable screening levels for sediment samples collected from the northern drainage on (b) (6). Metal concentrations were greater than both background sampling locations and the adjacent Farm Pond. OFF-20 was the most downstream location and exhibited the lowest concentrations of metals. TCLP metals analysis was also performed for the sample collected from location OFF-15, and the results for cadmium exceeded the toxicity characteristic maximum concentration. Field notes indicate that apparent smelter waste materials were present beneath the sediment at locations OFF-14 and OFF-15.

8.1.1.4.10 Southern Drainage on Tulsa County Plat 34010 in Sec 32 T22N R14E Property Surface Water and Sediment

Surface water was collected from three locations associated with the southern drainage on (b) (6), portions of which include property associated with the former Bartelsville Zinc Company. Arsenic, cadmium, and lead were not detected in the surface water samples collected from the southern drainage on the property. Zinc was detected in two samples, but only the detection in the sample from OFF-13 exceeded one or more screening levels.

Arsenic, cadmium, lead, and zinc were detected in the sediment samples. Arsenic was the only metal that exhibited exceedence of the industrial outdoor worker or residential soil screening level. All of the metals exhibited exceedences of the ecological screening levels. The concentrations for each of the metals in sediment were also greater than both background sampling locations and the adjacent Farm Pond. Results

for arsenic, cadmium, and lead were similar at all three locations. Zinc concentrations increased in sample locations to the east.

8.1.1.5 Groundwater

Groundwater samples were collected to determine the nature and extent of potential groundwater contamination. Samples were collected in a staged approach. Direct-push techniques were used to install temporary piezometers at the TFM, which were used to determine groundwater flow in the area. After determination of groundwater flow direction, monitoring wells were installed to evaluate the impact to groundwater, if any, at the TFM boundaries and downgradient of suspected sources of contamination.

Results of the RI Phase I groundwater data indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of dissolved cadmium at MW-04, concentrations of dissolved metals within the wells were below screening levels. Further evaluation of groundwater downgradient of Monitoring Well MW-04 at an off-site location was performed during Phase II activities to provide horizontal delineation of metals in groundwater. In addition, Monitoring Well MW-04D was installed and screened in bedrock during RI Phase II to provide the vertical delineation of metals at this location.

Results of the RI Phase II groundwater data further indicated that source area contamination was not significantly impacting groundwater beneath the TFM. A comparison of total and dissolved metals analysis indicated that leaching and subsequent migration of metals contamination appeared to be limited. With the exception of unfiltered and filtered cadmium at MW-04, concentrations of dissolved metals within the wells were below screening levels. The limited presence of metals constituents within the dissolved phase groundwater and a lack of metal constituents in downgradient Monitoring Well MW-06 indicated that migration of contaminants from the site was limited. The limited presence of metals constituents at MW-04D also indicates that constituents are not migrating vertically. The detections of zinc at MW-04D closely resemble those of the upgradient monitoring well, MW-01.

8.1.1.6 Ecological/Vegetation

Ecological/vegetation samples were collected at the TFM site and in the surrounding area during the 2004, 2005, and 2006 growing seasons. Samples were collected from locations at the TFM and at the property at [REDACTED] (b) (6) [REDACTED], which is adjacent to the TFM. Blackberry bushes were sampled for blackberries (washed and unwashed), leaves (washed and unwashed), roots (washed), and soils from the root area.

Ecological/vegetation sample results are presented on Tables 4-43 through 4-46. These data were evaluated as part of the human health and ecological risk assessment. A summary of the data is presented in the following paragraphs:

- Blackberries - Lead and Zinc were detected in unwashed blackberries collected from the property at [REDACTED] (b) (6) [REDACTED]. Zinc was the only constituent detected in washed blackberries. Arsenic, lead, and zinc were detected in higher concentration in both the unwashed and washed blackberry samples that were collected on the TFM site. Lower results were noted for the washed versus unwashed samples, suggesting that aerial deposition of dust rather than plant uptake is the primary mechanism for metals contamination of the blackberries.
- Leaves – Zinc was the only metal detected in both washed and unwashed leaves from the blackberry bushes on the property at [REDACTED] (b) (6) [REDACTED]. Arsenic, lead, and zinc was detected in higher concentrations in both washed and unwashed leaves from the blackberry bushes on the TFM Site. Lower results were noted for the washed versus unwashed leaf samples, suggesting that aerial deposition of dust was the primary mechanism for metals contamination of the leaves.
- Roots - Arsenic, cadmium, lead, and zinc were detected in root samples that were collected from the adjacent property at [REDACTED] (b) (6) [REDACTED] and the TFM property. The metal concentrations for root samples that were collected on the TFM property were greater than those collected from off-site locations, suggesting root uptake from the smelter waste.
- Soil/Waste - Soil and waste samples that were collected from surrounding the plant roots. Each of the samples exhibited detections of arsenic, cadmium, lead, and zinc. Detections were highest in the samples collected from the TFM property, and each of these samples exhibited results that exceeded several screening levels. TCLP lead for samples collected from the TFM exceeded the screening criteria, indicating that the materials for these samples are hazardous by characteristic.

8.1.1.7 Air Monitoring

Continuous perimeter air monitoring was conducted over a 7-day period, and samples were analyzed for: TSP, PM₁₀, and airborne particulate metals (See Table 4-48). Air monitoring sample results were compared to the following screening levels: USEPA Region VI human health screening levels and the NESHAPs. Cadmium and zinc were not detected. Lead was detected in all samples, but the results were less than the NESHAP. Arsenic was detected in the sample collected on Day 7, and the result exceeded

the USEPA Region VI human health screening level. Arsenic and lead detections were similar to the background values, suggesting that the TFM is not currently a source of airborne contamination off-site.

8.1.2 Contaminant Fate and Transport

Arsenic, cadmium, lead, and zinc were detected above background levels in surface soil, subsurface soil, groundwater, surface water, sediment, and/or air samples evaluated as part of the RI field activities.

Metals are the most widespread of the contaminants at the Site, with arsenic, cadmium, lead, and zinc detected above background levels in one or more of the media sampled. In general, metals were most widespread in on-site soils and sediment, with most concentrations above background levels occurring in the surface soils at the Site. Metals are not degraded, but rather persist in one medium until being removed or transported to another. Most of the metals detected at the Site are strongly sorbed to soil and are relatively immobile. The metals will likely persist in the soils.

8.1.3 Baseline Risk Assessment

A baseline risk assessment was conducted to evaluate baseline potential risks that might be experienced by human receptors coming into contact with soil, air, groundwater, surface water, and/or sediment contamination associated with the Site. Due to the distribution of contamination on the Site into an area containing waste material and an area without visible waste materials, the evaluation of the human health and ecological risk was based on the on-site waste area, on-site non-waste area, and off-site properties. Both current and future potential exposure settings were assessed under the assumption that no further remediation at the Site takes place.

8.1.4 Summary of Human Health Risk

The potential for human health risk from exposure to chemicals at the Site was considered for soil, air, groundwater, surface water, sediment, fish tissue, and plant tissue. COPCs were identified for each medium in the waste and non-waste areas on-Site and for the different properties that were sampled in the off-Site investigation. The COPC selection process was based on a toxicity screening using published screening levels from USEPA Region VI.

Information regarding current and potential future land and water use was used to develop the exposure scenarios evaluated; many of the same exposure scenarios were evaluated for both the waste and non-waste areas. The Site is currently vacant, and the future land use has not been decided; therefore, the risk assessment evaluated resident, trespasser, and outdoor commercial/industrial scenarios. Since future occupation of the Site would necessitate development, a construction/utility scenario was also evaluated. As there are currently no restrictions or ordinances prohibiting the installation of drinking water on the

Site, groundwater was evaluated as a potential potable water source. Based on these land and water use assumptions, potentially exposed populations and potentially completed pathways were identified.

Future on-Site adult and child residents were assumed to be potentially exposed to constituents in shallow (0-2 feet bgs) soil through incidental ingestion, dermal contact, and ingestion of washed produce; constituents in outdoor air through inhalation; constituents in groundwater through ingestion and dermal contact; and constituents in surface water and sediment through incidental ingestion and dermal contact.

On-Site youth trespassers were assumed to be potentially exposed to constituents in shallow (0-2 feet bgs) soil through incidental ingestion, dermal contact, and ingestion of unwashed produce; constituents in outdoor air through inhalation; and constituents in surface water and sediment through incidental ingestion and dermal contact.

Future on-Site Outdoor commercial/industrial workers were assumed to engage in seasonal groundskeeping/landscaping activities that could lead to exposure to constituents in shallow (0-2 feet bgs) soil through incidental ingestion and dermal contact, constituents in outdoor air, and constituents in surface water and sediment through dermal contact. Future on-Site construction/utility workers were assumed to be potentially exposed to constituents in soil through ingestion, dermal contact, and inhalation of dust; constituents in shallow groundwater through dermal contact from pooled water in an excavation trench; and constituents in surface water from the on-site cistern.

Chemical intake was calculated for each chemical in each medium using the maximum detected concentration or 95 percent UCL as the exposure concentration, whichever was applicable.

Hazard indices for the following populations exceeded the USEPA level of concern for noncancer risk, which is a hazard index greater than one:

- Future waste area adult and child residents;
- Future non-waste area adult and child residents;
- Future waste area outdoor commercial/industrial workers;
- Future waste area construction/utility workers;
- Future waste area trespassers;
- Current/Future off-site trespassers;
- Current child resident at (b) (6);
- Current adult and child residents at (b) (6);
- Current child resident at (b) (6);

- Current child resident at [REDACTED] (b) (6) [REDACTED]
- Current child resident at [REDACTED] (b) (6) [REDACTED];
- Current child resident at [REDACTED] (b) (6) [REDACTED];
- Current child resident at (b) (6) [REDACTED]

Excess lifetime cancer risk estimates for the following scenarios exceeded the USEPA target risk range of one in 10,000 to one in a million:

- Future waste area residents;
- Future non-waste area residents;
- Future waste area outdoor commercial/industrial workers;
- Current resident at (b) (6) [REDACTED]
- Current resident at [REDACTED] (b) (6) [REDACTED];
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Current resident at (b) (6) [REDACTED]

The following populations had excess lifetime cancer risk estimates within the USEPA target range of one in 10,000 to one in a million:

- Future non-waste area outdoor commercial/industrial workers;
- Future waste area construction/utility workers;
- Future non-waste area construction/utility workers;
- Future waste area trespassers;
- Current/Future off-site trespassers;
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Future resident at City Park;
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Current resident at Faith Assembly Church;
- Current resident at [REDACTED] (b) (6) [REDACTED]
- Current resident at [REDACTED] (b) (6) [REDACTED];
- Future resident at High School property;
- Current resident at [REDACTED] (b) (6) [REDACTED];

- Current resident at (b) (6);
- Current resident at (b) (6);
- Future resident at Pioneer Park;
- Current resident at Rural Fire Department property;
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);
- Current resident at (b) (6);

To evaluate potential health risks associated with exposure to lead, detected concentrations of lead in on-Site soil were used in the USEPA's IEUBK model for residents, and the adult lead model for outdoor commercial/industrial and construction/utility workers. Detected concentrations of lead in off-site soil were compared to the USEPA recommended screening level of 400 mg/kg for residential scenarios. The results of this comparison indicate that concentrations of lead in on-site and selected off-site soil samples are likely to pose health risks to residential or commercial/industrial receptors.

8.1.5 Summary of Ecological Risk

Both the on-site waste area and on-site non-waste area of the TFM Site were evaluated both qualitatively and quantitatively to assess risk to ecological receptors and the presence of completed ecological exposure pathways. Based upon observed Site conditions, it was concluded that flora and fauna could be exposed to Site-related constituents through direct contact and/or ingestion of soil, pond sediments, surface water, and fish. Similarly, it was concluded that area fauna could be exposed to Site-related constituents through the bioaccumulation of Site related constituents in benthic invertebrates, aquatic and terrestrial invertebrates, aquatic and terrestrial plants, small mammal prey, and fish. However, it was assumed that groundwater was not part of a completed pathway and animals that inhabit the Site would not be exposed to site-related constituents through direct contact and/or ingestion of groundwater.

In general, the greatest risk from exposure to COPECs was from on-site waste area soils and sediments. Surface water, regardless of source, typically resulted in the least amount of risk from exposure to COPECs. Among the four areas (i.e., on-site waste, on-site non-waste, off-site, and background) the soils, sediments, and surface water in the background area resulted in the least amount of risk from exposure to COPECs.

A comparison of the soils from the on-site waste, on-site non-waste, off-site, and background areas indicates that the detected concentrations of chemicals are greatest in the on-site waste area, relatively similar in the on-site non-waste and off-site areas (off site properties adjacent to the TFM Site), and least in the background area. Based on the results of the soil invertebrates evaluation, the risk of exposure to COPECs is greatest for soil invertebrates within the on-site waste area and least for soil invertebrates within the background area. The risk of exposure to COPECs is relatively similar for soil invertebrates within the on-site non-waste and off-site areas; however, soil invertebrates from the off-site area experience slightly more risk.

Based on the result from the evaluation of terrestrial plants, blackberry shrubs in the on-site waste area experienced a greater risk from exposure to COPECs than blackberry shrubs from the off-site and background areas. The risk from exposure to COPECs experienced by terrestrial plants from the on-site non-waste area was greater than what was experienced by blackberry shrubs from the on-site waste area; however, the risk experienced by terrestrial plants from the on-site non-waste area, which is based on maximum concentrations detected in soils from the on-site non-waste area and not sampled vegetation, may overestimate the actual risk experienced by terrestrial plants from the on-site non-waste area.

The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin (species with relatively small home ranges that likely spend all of their lives within one area), indicate that living within the on-site waste area will result in the greatest amount of risk from exposure to COPECs and living within the background area results in the least amount of risk from exposure to COPECs. The results of the evaluations for the short-tailed shrew, white-footed mouse, cottontail rabbit, meadow vole, and American robin also indicate that the on-site non-waste area and off-site area result in less risk from exposure to COPECs than the on-site waste area. Additionally, the on-site non-waste area, in general, will result in a greater amount of risk from exposure to COPECs than the off-site area.

With the exception of the red-tailed hawk, the results of the evaluations for the red fox, raccoon, and white-tailed deer (species with relatively large home ranges that likely only spend a fraction of their time within a given area) indicate that the relatively small amount of time that is spent in either the on-site waste area or the on-site non-waste area results in a relatively smaller amount of risk from exposure to COPECs than what is experienced during time spent within the off-site area. The red-tailed hawk experiences risk from exposure to COPECs through the consumption of surface water and small mammal prey (cottontail rabbit) and by inadvertently consuming soils. The results of the evaluation for the red-tailed hawk mirror the result of the evaluation for the cottontail rabbit and indicate that the greatest

amount of risk from exposure to COPECs was experienced in the on-site waste area, the next greatest amount of risk was experienced in the on-site non-waste area, the third greatest amount of risk was experienced in the off-site area, and the least amount of risk from exposure to COPECs was experienced in the background area.

In general, exposure to sediments resulted in a greater amount of risk from exposure to COPECs than exposure to surface waters. Populations of benthic invertebrates from the on-site waste area experienced a greater amount of risk from exposure to COPECs than populations of benthic invertebrates from the on-site non-waste area, off-site area, and background area. Populations of benthic invertebrates from Pond 1 of the on-site waste area experienced the greatest amount of risk from exposure to COPECs. Populations of benthic invertebrates from the drainage ditches east and west of the railroad tracks in the off-site area, which are located east and down stream from Pond 1 in on-site waste area, experienced a greater amount of risk from exposure to COPECs than benthic invertebrate populations within the Farm Pond (northwest and up stream from the TFM Site) and the intermittent drainage east of the Strip Mine Pit (located downstream of the Strip Mine Pit).

The benthic invertebrates that inhabit Strip Mine Pit experienced the least amount of risk from exposure to COPECs than all ponds and surface waters in the on-site waste area. Populations of benthic invertebrates from Pond 4 in the on-site non-waste area experienced less risk from exposure to COPECs than benthic invertebrate populations inhabiting Ponds 1 through 3 and the Mid-Site Ravine in the on-site waste area. The benthic invertebrates that inhabit Pond 5 experienced the least amount of risk from exposure to COPECs than all other ponds and surface waters of the TFM Site. Benthic invertebrate populations that inhabit the City Lake and the pond at (b) (6) from the background area experienced the least amount of risk from exposure to COPECs.

Great blue herons from the on-site waste area experienced the most risk from exposure to COPECs from consuming sediments from the Strip Mine Pit and the least amount of risk from exposure to COPECs from consuming surface water. Similarly, Mallard ducks from the on-site waste area experienced the most risk from exposure to COPECs from consuming benthic and aquatic invertebrates and sediments and the least amount of risk from consuming aquatic plants and surface water. The belted kingfisher, which only consumed fish and surface water, experienced the least amount of risk from exposure to COPECs in the on-site waste area.

Aquatic invertebrates and aquatic plants that occur in the Mid-Site Ravine and Pond 1 of the on-site waste area and in the drainage ditches along Old U.S. Hwy 169 experienced the most risk from exposure to

COPECs. Populations of aquatic invertebrates and aquatic plants that occurred in the Strip Mine Pit, Farm Pond, and City Lake, experienced the least amount of risk from exposure to COPECs because surface water samples taken from those ponds yielded no detections for arsenic, cadmium, lead, and zinc.

Fish populations within the Strip Mine Pit experienced a greater amount of risk from exposure to COPECs than fish populations within the drainage ditches along Old U.S. Hwy 169 and east of the on-site waste area. Fish populations within the intermittent drainage east of the Strip Mine Pit, Farm Pond, and City Lake experienced the least amount of risk from exposure to COPECs. This result is because the maximum concentration of arsenic, cadmium, lead, and zinc detected in tissues taken from fish within the Strip Mine Pit is greater than the maximum concentrations detected in the surface water of the Strip Mine Pit or other surface waters from the off-site and background areas.

The raccoon is an omnivore that forages and hunts for food within terrestrial and aquatic environments. For the purposes of this evaluation, raccoon were evaluated separately because they occupy both the terrestrial and aquatic habitats. The amount of risk from exposure to COPECs that a raccoon is exposed to is based on maximum concentrations detected in surface water, sediments, soils, and vegetation sampled and the modeled uptake concentration calculated for benthic invertebrates, soil invertebrates, fish, and small mammals from each area and terrestrial plants from the on-site non-waste area where no vegetation was sampled. As indicated previously, raccoon from the off-site area experienced more risk from exposure to COPECs than raccoon from the on-site non-waste and on-site waste areas because of the relative amount of time that a raccoon spends within each area (on-site waste, on-site non-waste, and off-site) within its assumed home range. In general, raccoons experienced the most risk from exposure to COPECs from consuming benthic invertebrates, soil invertebrates, soils, and sediments and the least amount of risk from consuming fish, small mammals, terrestrial plants, and surface water.

Snakes, lizards, box turtles, and painted turtles that occupy the TFM Site are likely experiencing some site-related risk. These species potentially consume and come in contact with soils, terrestrial plants, surface water, aquatic plants, or pond sediments at the TFM Site. The surrogate for insectivorous lizards and toads, the insectivorous short-tailed shrew, had higher rates of soil ingestion and experienced greater risk than did other representative species. The surrogate for the box turtle, the omnivorous meadow vole, also experienced significant risk due to consuming soils and soil invertebrates within the TFM Site. These reptile species and their surrogates burrow in the ground and consume prey that lives in soils. Among the surrogates for the painted turtle (the omnivorous mallard duck and piscivorous belted kingfisher) the mallard duck experienced greater risk from exposure to COPECs than did the belted kingfisher. The majority of the risk experienced by the mallard duck resulted from exposure to pond

sediments. However, this evaluation may over-predict the risk because it was assumed that the diets and rates of consumption of reptiles, terrestrial mammals, and aquatic birds were similar or comparable even though avian and mammalian receptors have different metabolisms than reptiles.

Secondary exposures to potential receptors may result from the bioaccumulation and bioconcentration of chemicals through the food chain. The mallard duck, great blue heron, belted kingfisher, red fox, red-tailed hawk and other species near the top of the food chain are potentially the most vulnerable to effects of bioaccumulation.

In general, inorganic arsenic compounds are more toxic than organic arsenic compounds whereas organic lead compounds were more toxic than inorganic lead compounds. Arsenic poisoning in wildlife is rare and there is no evidence of magnification along the aquatic food chain because most of the ingested arsenic is rapidly excreted in the urine within the first few days of exposure (Eisler, 1988a). Cadmium, which is also excreted primarily in urine and feces, tends to increase in concentration with age of the organism and may eventually act as a cumulative poison (Eisler, 1985). Lead is also bioconcentrated by organisms with concentrations increasing as the organism ages, localizing in hard tissues such as bone and teeth (Eisler, 1988b). Biomagnification of Arsenic, cadmium, and lead through the food chain is negligible (Eisler, 1985, 1988a, and 1988b). Zinc is a nutritionally important essential trace element but may biomagnify up the food chain and may cause problems in aquatic systems (Eisler, 1993). Ingestion of zinc at recommended levels is beneficial to the health of an animal. Ingestion of zinc at high levels may lead to systemic toxicity; however, the levels required to induce toxic effects are unlikely to be obtained through exposure to environmental media.

8.2 CONCLUSIONS

Laboratory analytical results from sampling completed during the RI field activities indicate that on-site surface and subsurface soils, surface water, sediment, groundwater, and vegetation have been impacted with metals at the Site. Additionally, surface soil, surface water, and sediment have been impacted with metals at certain off-site properties. Much of the contamination present at the Site is suspected to be a result of the historical smelting activities. Review of the Site indicated a clear division into two areas: 1) areas of the TFM site where waste materials were not visually observed during sampling (i.e., on-site non-waste areas); and, 2) areas of the TFM site where waste materials were visually observed during sampling (i.e., on-site waste areas). Soil sample results were compared to the following screening levels: USEPA Region VI screening levels for ecological receptors, industrial indoor workers, industrial outdoor workers, and residential soil. Results for the TCLP metals analysis were compared to the toxicity characteristic maximum concentrations listed in 40 CFR 261.24.

The on-site non-waste area was approximately 36 acres (See area with white background on Figure 4-2), and approximately 25 acres of this area exhibited soil concentrations that exceeded residential screening levels in the 0 to 0.5 ft bgs interval. The on-site contamination in the non-waste area is primarily located in the top 0 to 0.5 ft of soil, with small areas nearest the waste area and slag-waste driveway exhibiting lead results in excess of residential screening levels up to 2 ft bgs. Concentrations of metals in samples collected nearest the northern and eastern TFM boundaries in the non-waste area exhibited the lowest on-site metal concentrations, and the horizontal extent of metals was established in this area. The horizontal extent of metals in the non-waste area was less clearly defined along the western TFM boundary, and samples collected from the properties at [REDACTED] (b) [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED], which are directly west of the TFM exhibited concentrations of lead that exceeded the residential soil screening value. Sampling conducted on these properties defined the western extent of contamination relative to the TFM site

The on-site waste area was approximately 25 acres and is shown with a tan background on Figure 4-2. Smelter waste materials (slag, broken retorts, etc.) were visually observed at the ground surface or within trenches or soil borings placed in this area. The waste area also includes the access road/driveway, which was constructed of smelter waste materials. The entire waste area contained soil with lead results in excess of residential screening levels in the 0 to 0.5 ft bgs interval. Additionally, exceedences of industrial screening levels were also noted. Horizontally, the highest concentrations of metals were observed in the south portion of the site and were associated with the former smelter operations area. The southern extent of the waste area was defined at the Strip Mine Pit, and waste slag piles were observed to have collapsed into the Strip Mine Pit. Soil samples collected off-site south of the Strip Mine Pit did not exhibit elevated metals results. The eastern edge of the waste area was noted at the property boundary; however, waste materials were noted outside of the fenceline in a low area between the TFM boundary and the Atchinson Topeka Santa Fe Railroad right-of-way. The railroad, which was constructed in 1899 prior to operation of the smelter, acted as a natural barrier to retain TFM waste materials to the west side of the railroad tracks.

On-site, metal concentrations decrease as sample depth increases. The vertical extent of metals contamination varied across the waste area. On the west side of Pond 3 near the on-site residence, waste was generally encountered to approximately 1 ft bgs. Across much of the waste area, waste materials varied in thickness between 2 to 3 ft bgs. Waste materials were observed up to 5 ft deep in the area between Ponds 1 and 2 and the area between Ponds 2 and 3. In addition, waste materials were observed up to 7 ft bgs across the length of the former smelter operations area. Samples collected from areas and depth intervals where waste material was observed exhibited results for TCLP cadmium or TCLP lead

that exceeded the toxicity characteristic maximum concentration. Due to the TCLP failure soil and waste materials at these locations would be classified as hazardous. Very few exceedences of screening levels were noted in samples collected below the waste materials from native clay material. In many cases these results were similar to background concentrations. Neither of the samples collected from native materials beneath the waste exhibited soil results that failed the TCLP screening criteria.

Surface soil samples were collected from off-site locations to determine the presence and extent of contamination due to potential aerial distribution of metals from the TFM smokestack. Samples were also collected from targeted sampling areas such as parks, schools, and playgrounds; tribal member properties near the TFM; and areas where waste materials were either visually observed or historically reported. Samples were collected from properties in the area immediately surrounding the TFM and from properties up to 1 ½ miles from the site. The data do not suggest an aerial dispersion plume from the TFM that resulted in widespread contamination. However, it was noted that properties greater than 1 mile from the TFM site exhibited the lowest concentrations of metals. Several properties immediately adjacent to the TFM exhibited metals results in excess of screening values, and the presence of smelter waste materials was typically visually observed at these locations.

Eleven (11) off-site properties with surface soil samples that exhibited lead concentrations in excess of the 400 mg/kg residential soil screening level were additionally characterized. At least one sample collected from these properties exhibited a lead result in excess of the residential screening level. In addition, materials with the appearance of smelter waste were observed at the following properties: right-of-way/ditches adjacent to TFM and associated with Old US Hwy 169 and the railroad, (b) (6) Street and associated retort embankment observed at 12th and Maple Street, (b) (6) and (b) (6) property. With the exception of areas where access agreements could not be obtained for additional delineation, the extent of elevated metals was typically defined for these properties.

Surface water and sediment were characterized for five on-site ponds, one on-site drainage, and the Strip Mine Pit immediately adjacent to the waste area. Surface water and sediment results were compared to applicable USEPA Region VI human health or ecological screening levels and/or Oklahoma Water Quality Criteria. The highest concentration of metals was noted in surface water and sediment associated with TFM Ponds 1 through 3 and the Mid-Site Ravine. Waste materials were observed in and around these surface water bodies, and a retort embankment was observed at Pond 3. In addition, smelter waste materials were observed to have collapsed into the Strip Mine Pit.

Surface water and sediment were also characterized for off-site areas where surficial transport from the TFM could have occurred. These areas included the drainage ditches associated with the railroad and Old US Hwy 169, a drainage on the northern portion of (b) (6) and a drainage on the southern portion of (b) (6). The ditches adjacent to the railroad and Old US Hwy 169 and the northern drainage on (b) (6) exhibited elevated metals concentrations in surface water and sediment. A large culvert passes from the TFM property under the railroad and to these drainages. Concentrations of metals decreased with increasing distance from the culvert.

Limited impacts were noted to groundwater beneath the TFM. Low-flow groundwater sampling conducted during RI Phase II indicated that elevated metals concentrations (i.e., cadmium) were only noted at Monitoring Well MW-04. However, the vertical extent of cadmium was defined by a groundwater sample from MW-04D, which was screened in a deeper interval than MW-04 and was non-detect for cadmium. The downgradient horizontal extent of cadmium was defined at off-site Well MW-06, which was non-detect for metals.

Samples were collected from off-site and on-site blackberry bushes during the 2004, 2005, and 2006 growing seasons. Elevated concentrations of metals were noted in blackberry samples collected from on-site bushes relative to the off-site bushes. Since washing of the berries reduced metals concentrations, the berry contamination appeared to be a result of aerial deposition of dust onto the berries rather than plant uptake.

Air monitoring samples were collected during RI Phase I. The results of the samples collected upwind versus downwind samples were similar, suggesting that the TFM is not currently a source of airborne contamination to off-site locations.

A number of exposure scenarios exist which could pose a human health or ecological risk from exposure to the chemicals present at the Site. The future land use at the Site is undecided, but precautions should be taken to minimize exposure to contaminants. The Site is currently fenced and access is through locked gates. However, damaged or vandalized portions of the fence need to be repaired and gates should be routinely monitored to inhibit trespassing onto the Site.

Remedial measures should be conducted to remove contaminant sources and waste materials identified during the RI field activities. The areas of visual waste materials in the southern portions of the Site should be remediated. In addition, TFM Ponds 1 through 3, the Mid-Site Ravine, and the Strip Mine Pit should be remediated to remove visible waste materials. This would include draining the water from each

pond and excavation of contaminated sediment. Since retorts were used for bank stabilization, these embankments would need to be replaced if the ponds were to be retained. Based upon future land use, soil remediation would also need to be conducted across the site to reduce soil concentrations of metals to levels that do not pose unacceptable risk to human health for a given use scenario.

Where observed, waste materials should also be removed from off-site properties. Certain off-site properties identified with a hazard index greater than one or excess lifetime cancer risk estimates in excess of the USEPA target risk range of one in 10,000 to one in a million should be further evaluated to address metals contamination in soil, sediment, or surface water.

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TABLES

Table 2-1
Background Soil Boring Sample Collection Summary

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Background Soil Boring Samples							
BG-SP-01	SS01	0-6"	8/16/2005	MS/MSD, CF	X		
BG-SP-01	SS02	6"-2'	8/16/2005		X	X	X
BG-SP-01	SS03	2-4'	8/16/2005		X		
BG-SP-02	SS01	0-6"	8/16/2005		X		
BG-SP-02	SS02	6"-2'	8/16/2005		X		
BG-SP-02	SS03	2-4'	8/16/2005		X		
BG-SP-03	SS01	0-6"	9/1/2006		X		
BG-SP-03	SS02	6"-2'	9/1/2006		X		
BG-SP-03	SS03	2-4'	9/1/2006		X		
BG-SP-04	SS01	0-6"	9/1/2006	CF	X	X	X
BG-SP-04	SS02	6"-2'	9/1/2006		X		
BG-SP-04	SS03	2-4'	9/1/2006		X		
BG-SP-05	SS01	0-6"	9/1/2006	FD of BG-SP-05/SS02	X		
BG-SP-05	SS02	6"-2'	9/1/2006		X		
BG-SP-1000	SS02	6"-2'	9/1/2006		X		
BG-SP-05	SS03	2-4'	9/1/2006		X		
BG-SP-06	SS01	0-6"	9/1/2006		X		
BG-SP-06	SS02	6"-2'	9/1/2006		X		
BG-SP-06	SS03 ¹	2'-4'	Not Collected		Not Sampled		
BG-SP-07	SS01	0-6"	9/1/2006		X		
BG-SP-07	SS02	6"-2'	9/1/2006		X		
BG-SP-07	SS03	2-4'	9/1/2006		X		

Notes:

1 = BG-SP-06/SS03 not sampled due to refusal at 2.2' below ground surface.

CF = Confirmation Sample

FD = Field Duplicate

ICP = Inductively Coupled Plasma

QA = Quality Assurance

QC = Quality Control

MS/MSD = Matrix Spike/Matrix Spike Duplicate

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

LD = Laboratory Duplicate

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

Table 2-2
On-Site Soil Boring Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Direct-Push Sample Collection							
SP-01	SS01	0-6"	7/28/2005	CF	X	X	X
SP-1000	SS01	0-6"	7/28/2005	CF, FD of SP-01/SS01	X	X	X
SP-01	SS02	6"-2'	7/28/2005		X		
SP-01	SS03	2-4'	7/28/2005	LD	X		
SP-02	SS01	0-6"	7/28/2005		X		
SP-03	SS01	0-6"	7/28/2005		X		
SP-03	SS02	6"-2'	7/28/2005		X		
SP-03	SS03	2-4'	7/28/2005		X		
SP-04	SS01	0-6"	7/28/2005		X		
SP-05	SS01	0-6"	7/29/2005	CF	X	X	X
SP-06	SS01	0-6"	7/29/2005		X		
SP-06	SS02	6"-2'	7/29/2005	FD of SP-06/SS02	X		
SP-1001	SS02	6"-2'	7/29/2005		X		
SP-06	SS03	2-4'	7/29/2005		X		
SP-07	SS01	0-6"	7/29/2005		X		
SP-08	SS01	0-6"	7/28/2005		X		
SP-09	SS01	0-6"	7/28/2005		X		
SP-09	SS02	6"-2'	7/28/2005		X		
SP-09	SS03	2-4'	7/28/2005		X		
SP-10	SS01	0-6"	7/28/2005		X		
SP-10	SS02	6"-2'	7/28/2005		X		
SP-10	SS03	2-4'	7/28/2005	CF	X	X	X
SP-11	SS01	0-6"	7/28/2005	FD of SP-11/SS01	X		
SP-1002	SS01	0-6"	7/28/2005		X		
SP-11	SS02	6"-2'	7/28/2005		X		
SP-11	SS03	2-4'	7/28/2005	LD	X		
SP-12	SS01	0-6"	7/28/2005		X		
SP-13	SS01	0-6"	7/28/2005		X		
SP-13	SS02	6"-2'	7/28/2005		X		
SP-13	SS03	2-4'	7/28/2005		X		
SP-14	SS01	0-6"	7/28/2005		X		
SP-15	SS01	0-6"	7/28/2005		X		
SP-16	SS01	0-6"	7/29/2005	Overcal	X	Zn	
SP-16	SS02	6"-2'	7/29/2005		X		
SP-16	SS03	2-4'	7/29/2005		X		
SP-1003	SS03	2-4'	7/29/2005	FD of SP-16/SS03	X		
SP-17	SS01	0-6"	7/29/2005		X		
SP-17	SS02	6"-2'	7/29/2005		X		
SP-17	SS03	2-4'	7/29/2005		X		
SP-18	SS01	0-6"	7/29/2005	Overcal	X	Zn	
SP-18	SS02	6"-2'	7/29/2005		X		
SP-18	SS03	2-4'	7/29/2005	CF	X	X	X
SP-19	SS01	0-6"	7/29/2005	FD of SP-19/SS01	X		
SP-1004	SS01	0-6"	7/29/2005		X		
SP-19	SS02	6"-2'	7/29/2005	Overcal	X	Zn	
SP-19	SS03	2-4'	7/29/2005		X		

Table 2-2
On-Site Soil Boring Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
SP-20	SS01	0-6"	7/29/2005	LD	X		
SP-20	SS02	6"-2'	7/29/2005		X		
SP-20	SS03	2-4'	7/29/2005		X		
SP-21	SS01	0-6"	7/29/2005		X		
SP-21	SS02	6"-2'	7/29/2005		X		
SP-21	SS03	2-4'	7/29/2005		X		
SP-22	SS01	0-6"	7/29/2005	CF	X	X	X
SP-22	SS02	6"-2'	7/29/2005		X		
SP-1005	SS02	6"-2'	7/29/2005	FD of SP-22/SS02	X		
SP-22	SS03	2-4'	7/29/2005		X		
SP-23	SS01	0-6"	7/29/2005		X		
SP-23	SS02	6"-2'	7/29/2005		X		
SP-23	SS03	2-4'	7/29/2005		X		
SP-24	SS01	0-6"	7/29/2005		X		
SP-24	SS02	6"-2'	7/29/2005		X		
SP-24	SS03	2-4'	7/29/2005		X		
SP-25	SS01	0-6"	7/29/2005	CF	X	X	X
SP-25	SS02	6"-2'	7/29/2005	CF, FD of SP-25/SS02	X	X	X
SP-1006	SS02	6"-2'	7/29/2005		X		
SP-25	SS03	2-4'	7/29/2005		X		
SP-26	SS01	0-6"	7/29/2005	LD	X		
SP-26	SS02	6"-2'	7/29/2005		X		
SP-26	SS03	2-4'	7/29/2005		X		
SP-27	SS01	0-6"	7/29/2005	Overcal	X	Zn	
SP-27	SS02	6"-2'	7/29/2005	Overcal	X	Pb, Zn	
SP-27	SS03	2-4'	7/29/2005	Overcal	X	Zn	
SP-28	SS01	0-6"	8/1/2005		X		
SP-28	SS02	6"-2'	8/1/2005		X		
SP-28	SS03	2-4'	8/1/2005		X		
SP-29	SS01	0-6"	7/29/2005	CF	X	X	X
SP-29	SS02	6"-2'	7/29/2005		X		
SP-1007	SS02	6"-2'	7/29/2005	FD of SP-29/SS02	X		
SP-29	SS03	2-4'	7/29/2005		X		
SP-30	SS01	0-6"	8/1/2005	Overcal	X	Pb, Zn	
SP-30	SS02	6"-2'	8/1/2005		X		
SP-30	SS03	2-4'	8/1/2005		X		
SP-31	SS01	0-6"	8/1/2005	Overcal	X	Zn	
SP-31	SS02	6"-2'	8/1/2005		X		
SP-31	SS03	2-4'	8/1/2005		X		
SP-32	SS01	0-6"	8/1/2005	CF	X	X	X
SP-32	SS02	6"-2'	8/1/2005		X		
SP-32	SS03	2-4'	8/1/2005		X		
SP-1008	SS03	2-4'	8/1/2005	FD of SP-32/SS03	X		
SP-33	SS01	0-6"	8/1/2005	LD	X		
SP-33	SS02	6"-2'	8/1/2005		X		
SP-33	SS03	2-4'	8/1/2005		X		

Table 2-2
On-Site Soil Boring Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
SP-34	SS01	0-6"	8/1/2005		X		
SP-34	SS02	6"-2'	8/1/2005		X		
SP-34	SS03	2-4'	8/1/2005		X		
SP-35	SS01	0-6"	8/1/2005	Overcal	X	Zn	
SP-35	SS02	6"-2'	8/1/2005		X		
SP-35	SS03	2-4'	8/1/2005		X		
SP-36	SS01	0-6"	8/1/2005	CF	X	X	X
SP-36	SS02	6"-2'	8/1/2005		X		
SP-1009	SS02	6"-2'	8/1/2005	FD of SP-36/SS02	X		
SP-36	SS03	2-4'	8/1/2005		X		
SP-37	SS01	0-6"	8/1/2005		X		
SP-37	SS02	6"-2'	8/1/2005		X		
SP-37	SS03	2-4'	8/1/2005		X		
SP-38	SS01	0-6"	8/1/2005	Overcal	X	Zn	
SP-38	SS02	6"-2'	8/1/2005		X		
SP-38	SS03	2-4'	8/1/2005		X		
SP-39	SS01	0-6"	7/29/2005	Overcal	X	Zn	
SP-39	SS02	6"-2'	7/29/2005	CF	X	X	X
SP-39	SS03	2-4'	7/29/2005		X		
SP-1010	SS03	2-4'	7/29/2005	FD of SP-39/SS03	X		
SP-40	SS01	0-6"	7/28/2005	Overcal	X	Zn	
SP-40	SS02	6"-2'	7/28/2005	LD, Overcal	X	Zn	
SP-40	SS03	2-4'	7/28/2005		X		
SP-41	SS01	0-6"	8/1/2005	Overcal	X	Zn	
SP-41	SS02	6"-2'	8/1/2005	Overcal	X	Zn	
SP-41	SS03	2-4'	8/1/2005		X		
SP-42	SS01	0-6"	8/1/2005		X		
SP-42	SS02	6"-2'	8/1/2005		X		
SP-42	SS03	2-4'	8/1/2005	CF	X	X	X
SP-43	SS01	0-6"	8/1/2005	Overcal	X	Zn	
SP-1011	SS01	0-6"	8/1/2005	FD of SP-43/SS01, Overcal	X	Zn	
SP-43	SS02	6"-2'	8/1/2005		X		
SP-43	SS03	2-4'	8/1/2005		X		
SP-44	SS01	0-6"	8/1/2005		X		
SP-44	SS02	6"-2'	8/1/2005		X		
SP-44	SS03	2-4'	8/1/2005		X		
SP-45	SS01	0-6"	8/1/2005		X		
SP-45	SS02	6"-2'	8/1/2005		X		
SP-45	SS03	2-4'	8/1/2005		X		
SP-46	SS01	0-6"	8/1/2005	CF	X	X	X
SP-46	SS02	6"-2'	8/1/2005		X		
SP-1012	SS02	6"-2'	8/1/2005	FD of SP-46/SS02	X		
SP-46	SS03	2-4'	8/1/2005		X		
SP-47	SS01	0-6"	7/28/2005	Overcal	X	Cd, Pb, Zn	
SP-47	SS02	6"-2'	7/28/2005		X		
SP-47	SS03	2-4'	7/28/2005	LD	X		

Table 2-2
On-Site Soil Boring Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
SP-48	SS01	0-6"	7/28/2005	Overcal	X	Zn	
SP-48	SS02	6"-2'	7/28/2005	Overcal	X	As, Pb, Zn	
SP-48	SS03	2-4'	7/28/2005		X		
SP-49	SS01	0-6"	7/28/2005	CF FD of SP-49/SS03	X	X	X
SP-49	SS02	6"-2'	7/28/2005		X		
SP-49	SS03	2-4'	7/28/2005		X		
SP-1013	SS03	2-4'	7/28/2005		X		
SP-50	SS01	0-6"	7/28/2005		X		
SP-50	SS02	6"-2'	7/28/2005		X		
SP-50	SS03	2-4'	7/28/2005		X		
SP-51	SS01	0-6"	8/1/2005		X		
SP-51	SS02	6"-2'	8/1/2005		X		
SP-51	SS03	2-4'	8/1/2005		X		
SP-52	SS01	0-6"	8/1/2005		X		
SP-52	SS02	6"-2'	8/1/2005		X		
SP-52	SS03	2-4'	8/1/2005		X		
SP-53	SS01	0-6"	8/1/2005	CF CF, FD of SP-53/SS01	X	X	X
SP-1014	SS01	0-6"	8/1/2005		X		
SP-53	SS02	6"-2'	8/1/2005		X		
SP-53	SS03	2-4'	8/1/2005		X		
SP-54	SS01	0-6"	8/18/2006		X		
SP-54	SS02	6"-2'	8/18/2006		X		
SP-55	SS01	0-6"	8/18/2006	CF FD of SP-55/SS01	X	X	X
SP-1015	SS01	0-6"	8/18/2006		X		
SP-55	SS02	6"-2'	8/18/2006		X		
SP-56	SS01	0-6"	8/18/2006		X		
SP-56	SS02	6"-2'	8/18/2006		X		
SP-56	SS03	2-4'	8/18/2006		X		
SP-57	SS01	0-6"	8/18/2006		X		
SP-57	SS02	6"-2'	8/18/2006		X		
SP-58	SS01	0-6"	8/18/2006		X		
SP-58	SS02	6"-2'	8/18/2006		X		
SP-59	SS01	0-6"	8/18/2006		X		
SP-59	SS02	6"-2'	8/18/2006		X		
SP-59	SS03	2-4'	8/18/2006		X		
SP-60	SS01	0-6"	8/18/2006	CF, MS/MSD, and LD	X	X	X
SP-60	SS02	6"-2'	8/18/2006		X		
SP-1016	SS02	6"-2'	8/18/2006	FD of SP-60/SS02	X		
Temporary Piezometers Installed by Direct-Push							
PZ-04	SS01	0-6"	8/2/2005	MS/MSD, CF	X	X	X
PZ-04	SS02	6"-2'	8/2/2005		X		
PZ-04	SS03	2-4'	8/2/2005		X		
PZ-04	SS04	4-8'	8/2/2005		X		
PZ-04	SS05	8-10.5'	8/2/2005		X		
PZ-07	SS01	0-6"	8/2/2005	Overcal	X	As, Pb, Zn	
PZ-07	SS02	6"-2'	8/2/2005		X		
PZ-1000	SS02	6"-2'	8/2/2005	FD of PZ-07/SS02 CF	X	X	X
PZ-07	SS03	2-4'	8/2/2005		X		
PZ-07	SS04	4-8'	8/2/2005		X		
PZ-07	SS05	8-10.25'	8/2/2005		X		

Table 2-2
On-Site Soil Boring Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
PZ-09	SS01	0-6"	8/2/2005	Overcal	X	Zn	
PZ-09	SS02	6"-2'	8/2/2005	Overcal	X	Zn	
PZ-09	SS04	4-8'	8/2/2005		X		
PZ-1002	SS04	4-8'	8/2/2005	FD of PZ-09/SS04	X		

Notes:

CF = Confirmation Sample
FD = Field Duplicate
ICP = Inductively Coupled Plasma
LD = Laboratory Duplicate
MS/MSD = Matrix Spike/Matrix Spike Duplicate
Overcal = Results in excess of XRF calibration range noted. Reanalysis using ICP during RI Phase II for the impacted constituent is noted in the column marked "Confirmation ICP for As, Cd, Pb, & Zn"
QA = Quality Assurance
QC = Quality Control
TCLP = Toxicity Characteristic Leaching Procedure
XRF = X-Ray Fluorescence Spectroscopy
As = Arsenic
Cd = Cadmium
Pb = Lead
Zn = Zinc

Table 2-3
On-Site Trench Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Trench Sample Collection							
TR-01	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	X
TR-1000	SS01	0-6"	7/26/2005	FD of TR-01/SS01, Overcal	X	As, Pb, Zn	
TR-01	SS02	2.5-3.0'	7/26/2005	CF	X	X	
TR-01	SS03	5.0-5.5'	7/26/2005		X		
TR-02	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	
TR-02	SS03	5.0-5.5'	7/26/2005		X		
TR-03	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	Zn
TR-03	SS02	2.5-3.0'	7/26/2005	LD, Overcal	X		
TR-03	SS03	5.0-5.5'	7/26/2005		X		
TR-04	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	
TR-04	SS03	1.5-2.0'	7/26/2005		X		
TR-05	SS01	0-6"	7/26/2005	CF	X	X	X
TR-05	SS02	2.0-2.5'	7/26/2005	Overcal	X	Pb, Zn	
TR-05	SS03	3.0-3.5'	7/26/2005		X		FD of TR-05/SS03
TR-1001	SS03	3.0-3.5'	7/26/2005		X		
TR-06	SS01	0-6"	7/26/2005	Overcal	X	Pb, Zn	
TR-06	SS03	1.75-2.25'	7/26/2005		X		
TR-07	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	
TR-07	SS02	1.75-2.25'	7/26/2005		X		
TR-07	SS03	2.75-3.25'	7/26/2005		X		
TR-08	SS01	0-6"	7/26/2005	Overcal	X	As, Pb, Zn	
TR-08	SS03	4.75-5.25'	7/26/2005		X		
TR-09	SS01	0-6"	7/27/2005	Overcal	X	As, Pb, Zn	X
TR-09	SS02	4.5-5.0'	7/27/2005	CF	X	X	
TR-1002	SS02	4.5-5.0'	7/27/2005	CF, FD of TR-09/SS02	X	X	
TR-09	SS03	6.5-7.0'	7/27/2005		X		
TR-10	SS01	0-6"	7/27/2005	Overcal	X	As, Cd, Pb, Zn	
TR-10	SS03	7.0-7.5'	7/27/2005		X		
TR-11	SS01	0-6"	7/26/2005	Overcal	X	Zn	Zn
TR-11	SS02	1.0-1.5'	7/26/2005	Overcal	X		
TR-11	SS03	2-2.5'	7/26/2005		X		
TR-12	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	
TR-12	SS03	2.5-3.0'	7/28/2005		X		
TR-13	SS01	0-6"	7/27/2005	Overcal	X	As, Cd, Pb, Zn	X
TR-13	SS02	3.25-3.75'	7/27/2005	Overcal	X	Pb, Zn	
TR-13	SS03	5.5-6.0'	7/27/2005	LD, CF	X	X	
TR-14	SS01	0-6"	7/27/2005	Overcal	X	Pb, Zn	FD of TR-14/SS01, Overcal
TR-1003	SS01	0-6"	7/27/2005		X	As, Pb, Zn	
TR-14	SS03	3.0-3.5'	7/27/2005		X		
TR-15	SS01	0-6"	7/26/2005	Overcal	X	Zn	Zn
TR-15	SS02	2.75-3.25'	7/26/2005	Overcal	X	Pb, Zn	
TR-15	SS03	4.75-5.25'	7/26/2005		X		
TR-16	SS01	0-6"	7/27/2005	Overcal	X	As, Pb, Zn	
TR-16	SS03	2.75-3.25'	7/27/2005		X		
TR-17	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	As, Pb, Zn
TR-17	SS02	0.5-1.0'	7/28/2005	Overcal	X		
TR-17	SS03	1.0-1.5'	7/28/2005		X		
TR-18	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	FD of TR-18/SS03
TR-18	SS03	2.5-3.0'	7/28/2005		X		
TR-1004	SS03	2.5-3.0'	7/28/2005		X		

Table 2-3
On-Site Trench Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
TR-19	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	
TR-19	SS02	3.0-3.5'	7/28/2005	CF	X	X	X
TR-19	SS03	5.0-5.5'	7/28/2005		X		
TR-20	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	
TR-20	SS03	3.75-4.25'	7/28/2005	LD	X		
TR-21	SS01	0-6"	7/28/2005	Overcal	X	As, Pb, Zn	
TR-21	SS03	2.5-3.0'	7/28/2005		X		

Notes:

CF = Confirmation Sample

FD = Field Duplicate

ICP = Inductively Coupled Plasma

LD = Laboratory Duplicate

Overcal = Results in excess of XRF calibration range noted. Reanalysis using ICP during RI Phase II for the impacted constituent is noted in the column marked "Confirmation ICP for As, Cd, Pb, & Zn"

QA = Quality Assurance

QC = Quality Control

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

Table 2-4
Off-Site Surface Soil Sample Collection Summary

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
Background Surface Soil Samples									
BG-OSL-01	SS01	0-3"	X	8/31/2005		CF	X	X	X
BG-OSL-02	SS01	0-3"	X	9/13/2005			X		
BG-OSL-03	SS01	0-3"	X	9/1/2006			X		
BG-OSL-04	SS01	0-3"	X	8/31/2006			X		
BG-OSL-05	SS01	0-3"	X	8/31/2006			X		
BG-OSL-06	SS01	0-3"	X	8/30/2006		CF, LD, and MS/MSD	X	X	X
BG-OSL-07	SS01	0-3"	X	8/31/2006		FD of BG-OSL-07/SS01	X		
BG-OSL-1000	SS01	0-3"	X	8/31/2006			X		
Off-Site Sample Grid Locations									
OSL-07	SS01	0-3"	X	8/25/2005			X		
OSL-08	SS01	0-3"	X	8/25/2005			X		
OSL-09	SS01	0-3"		No Access			Not Sampled		
OSL-10	SS01	0-3"		No Access			Not Sampled		
OSL-11	SS01	0-3"		No Access			Not Sampled		
OSL-12	SS01	0-3"	X	8/29/2005	Phase I location OSL-12 at depth	CF	X	X	X
OSL-12A	SS02	3-12"	X	9/7/2006			X		
OSL-12B	SS01	0-3"	X	9/7/2006	50' North of OSL-12A		X		
OSL-12B	SS02	3-9"	X	9/7/2006			X		
OSL-12C	SS01	0-3"	X	9/7/2006	50' East of OSL-12A		X		
OSL-12C	SS02	3-12"	X	9/7/2006			X		
OSL-12D	SS01	0-3"	X	9/7/2006	50' South of OSL-12A		X		
OSL-12D	SS02	3-12"	X	9/7/2006			X		
OSL-12E	SS01	0-3"	X	9/7/2006	50' West of OSL-12A	FDup of OSL-12E/SS01 CF	X		
OSL-1006	SS01	0-3"		9/7/2006			X		
OSL-12E	SS02	3-12"	X	9/7/2006			X	X	X
OSL-13	SS01	0-3"		No Access			Not Sampled		
OSL-14	SS01	0-3"	X	8/26/2005			X		
OSL-15	SS01	0-3"		No Access			Not Sampled		
OSL-16	SS01	0-3"		No Access			Not Sampled		
OSL-17	SS01	0-3"	X	8/31/2005		CF	X	X	X
OSL-1002	SS01	0-3"		8/31/2005		CF, FD of OSL-17/SS01	X	X	X
OSL-18	SS01	0-3"		No Access			Not Sampled		
OSL-19	SS01	0-3"		9/7/2005			X		
OSL-20	SS01	0-3"		No Access			Not Sampled		

Table 2-4
Off-Site Surface Soil Sample Collection Summary

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Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-21	SS01	0-3"	X	8/26/2005		LD	X		
OSL-22	SS01	0-3"		No Access			Not Sampled		
OSL-23	SS01	0-3"		No Access			Not Sampled		
OSL-24	SS01	0-3"		No Access			Not Sampled		
OSL-25	SS01	0-3"	X	8/29/2005		FD of OSL-25/SS01	X		
OSL-1004	SS01	0-3"		8/29/2005			X		
OSL-26	SS01	0-3"		No Access			Not Sampled		
OSL-27	SS01	0-3"	X	8/30/2005		LD	X		
OSL-28	SS01	0-3"		No Access			Not Sampled		
OSL-29	SS01	0-3"	X	8/30/2005			X		
OSL-30	SS01	0-3"		No Access			Not Sampled		
OSL-31	SS01	0-3"	X	8/31/2005			X		
OSL-32	SS01	0-3"		No Access			Not Sampled		
OSL-33	SS01	0-3"	X	8/25/2005			X		
OSL-34	SS01	0-3"	X	8/26/2005			X		
OSL-35	SS01	0-3"	X	8/24/2005			X		
OSL-36DW	GRAB	0-3"	X	8/31/2005	Driveway Sample		X		
OSL-36	SS01	0-3"	X	8/31/2005	Phase I location OSL-36 at depth		X		
OSL-36A	SS02	3-12"	X	9/12/2006			X		
OSL-36B	SS01	0-3"	X	9/12/2006	50' North of OSL-36A		X		
OSL-36B	SS02	3-12"	X	9/12/2006			X		
OSL-36C	SS01	0-3"	X	9/12/2006	50' East of OSL-36A	CF	X	X	X
OSL-36C	SS02	3-12"	X	9/12/2006			X		
OSL-36D	SS01	0-3"	X	9/12/2006	50' South of OSL-36A		X		
OSL-36D	SS02	3-12"	X	9/12/2006			X		
OSL-36E	SS01	0-3"	X	9/12/2006	50' West of OSL-36A	FDup of OSL-36E/SS01	X		
OSL-1008	SS01	0-3"		9/12/2006			X		
OSL-36E	SS02	3-12"	X	9/12/2006			X		
OSL-37	SS01	0-3"	X	8/31/2005			X		
OSL-38	SS01	0-3"	X	8/31/2005			X		
OSL-39	SS01	0-3"	X	8/31/2005		CF	X	X	X
OSL-1001	SS01	0-3"		8/31/2005		CF, FD of OSL-39/SS01	X	X	X
OSL-39A	SS02	3-12"	X	9/1/2006	Phase I location OSL-39 at depth		X		
OSL-39B	SS01	0-3"	X	9/5/2006	50' North of OSL-39A		X		
OSL-39B	SS02	3-12"	X	9/5/2006			X		

Table 2-4
Off-Site Surface Soil Sample Collection Summary

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-39C	SS01	0-3"	X	9/5/2006	50' East of OSL-39A	FDup of OSL-39C/SS01	X		
OSL-1007	SS01	0-3"		9/5/2006			X		
OSL-39C	SS02	3-12"	X	9/5/2006			X		
OSL-39D	SS01	0-3"	X	9/6/2006	50' South of OSL-39A		X		
OSL-39D	SS02	3-12"	X	9/6/2006			X		
OSL-39E	SS01	0-3"	X	9/6/2006	50' West of OSL-39A	CF	X	X	X
OSL-39E	SS02	3-12"	X	9/6/2006		LDup	X		
OSL-40	SS01	0-3"	X	8/29/2005	Phase I location OSL-40 at depth		X		
OSL-40A	SS02	3-12"	X	8/24/2006			X		
OSL-40B	SS01	0-3"	X	8/24/2006	50' North of OSL-40A	FDup of OSL-40B/SS02	X		
OSL-40B	SS02	3-12"	X	8/24/2006			X		
OSL-1009	SS02	3-12"		8/24/2006			X		
OSL-40C	SS01	0-3"	X	8/24/2006	50' East of OSL-40A	LDup	X		
OSL-40C	SS02	3-12"	X	8/24/2006			X		
OSL-40CC	SS01	0-3"	X	9/6/2006	50' East of OSL-40C		X		
OSL-40CCC	SS01	0-3"	X	9/6/2006	100' East of OSL-40C		X		
OSL-40D	SS01	0-3"	X	8/24/2006	50' South of OSL-40A	CF	X	X	X
OSL-40D	SS02	3-12"	X	8/24/2006			X		
OSL-40DD	SS01	0-3"	X	9/6/2006	100' Southeast of OSL-40D		X		
OSL-40E	SS01	0-3"	X	8/24/2006	50' West of OSL-40A		X		
OSL-40E	SS02	3-12"	X	8/24/2006			X		
OSL-41	SS01	0-3"	X	8/29/2005		FD of OSL-41/SS01	X		
OSL-1003	SS01	0-3"		8/29/2005			X		
OSL-46	SS01	0-3"	X	8/29/2005			X		
OSL-47	SS01	0-3"	X	8/29/2005			X		
OSL-48	SS01	0-3"	X	8/31/2005			X		
OSL-49	SS01	0-3"	X	8/31/2005	Phase I location OSL-49 at depth	FDup of OSL-49A/SS02	X		
OSL-49A	SS02	3-12"	X	8/24/2006			X		
OSL-1010	SS02	3-12"		8/24/2006			X		
OSL-49B	SS01	0-3"	X	8/24/2006	50' North of OSL-49A		X		
OSL-49B	SS02	3-12"	X	8/24/2006			X		
OSL-49C	SS01	0-3"	X	8/24/2006	50' East of OSL-49A		X		
OSL-49C	SS02	3-12"	X	8/24/2006			X		

Table 2-4
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Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-49D	SS01	0-3"	X	8/24/2006	50' South of OSL-49A		X		
OSL-49D	SS02	3-12"	X	8/24/2006		CF	X	X	X
OSL-49DD	SS01	0-3"	X	9/6/2006	100' South of OSL-49D		X		
OSL-49E	SS01	0-3"	X	8/24/2006	50' West of OSL-49A		X		
OSL-49E	SS02	3-12"	X	8/24/2006			X		
OSL-49EE	SS01	0-3"	X	9/6/2006	100' West of OSL-49E		X		
OSL-54	SS01	0-3"	X	8/31/2005			X		
OSL-55	SS01	0-3"	X	8/31/2005			X		
OSL-56	SS01	0-3"	X	8/31/2005			X		
OSL-57	SS01	0-3"	X	8/27/2005			X		
OSL-58	SS01	0-3"	X	8/27/2005			X		
OSL-59	SS01	0-3"	X	8/30/2005			X		
OSL-60	SS01	0-3"		No Access			Not Sampled		
OSL-61	SS01	0-3"	X	8/30/2005			X		
OSL-62	SS01	0-3"		No Access			Not Sampled		
OSL-63	SS01	0-3"	X	8/31/2005		LD	X		
OSL-64	SS01	0-3"	X	8/31/2005			X		
OSL-65	SS01	0-3"	X	8/31/2005			X		
OSL-66	SS01	0-3"	X	8/31/2005			X		
OSL-67	SS01	0-3"	X	8/31/2005			X		
OSL-68	SS01	0-3"	X	8/29/2005			X		
OSL-69	SS01	0-3"	X	8/29/2005		MS/MSD, CF	X	X	X
OSL-70	SS01	0-3"		No Access			Not Sampled		
OSL-71	SS01	0-3"		No Access			Not Sampled		
OSL-72	SS01	0-3"		No Access			Not Sampled		
OSL-73	SS01	0-3"	X	8/30/2005			X		
OSL-1005	SS01	0-3"		8/30/2005		FD of OSL-73/SS01	X		
OSL-74	SS01	0-3"		No Access			Not Sampled		
OSL-75	SS01	0-3"		No Access			Not Sampled		
OSL-76	SS01	0-3"		No Access			Not Sampled		
OSL-77	SS01	0-3"		No Access			Not Sampled		
OSL-78	SS01	0-3"	X	8/29/2005			X		
OSL-79	SS01	0-3"		No Access			Not Sampled		
OSL-80	SS01	0-3"		No Access			Not Sampled		
OSL-81	SS01	0-3"		No Access			Not Sampled		

Table 2-4
Off-Site Surface Soil Sample Collection Summary

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Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-82	SS01	0-3"		No Access			Not Sampled		
OSL-83	SS01	0-3"		No Access			Not Sampled		
OSL-84	SS01	0-3"		No Access			Not Sampled		
OSL-85	SS01	0-3"		No Access			Not Sampled		
OSL-94	SS01	0-3"	X	8/30/2005			X		
OSL-94DW	GRAB	0-3"	X	8/30/2005			X		
OSL-95	SS01	0-3"	X	8/30/2005			X		
OSL-96	SS01	0-3"	X	8/30/2005			X		
OSL-96A	SS02	3-12"	X	8/28/2006	Phase I location OSL-96 at depth		X		
OSL-96B	SS01	0-3"		No Access	50' North of OSL-96A	LDup	Not Sampled		
OSL-96B	SS02	3-12"		No Access			Not Sampled		
OSL-96C	SS01	0-3"	X	8/28/2006	50' East of OSL-96A	FDup of OSL-96C/SS01	X		
OSL-1011	SS01	0-3"		8/28/2006			X		
OSL-96C	SS02	3-12"	X	8/28/2006			X		
OSL-96D	SS01	0-3"	X	8/28/2006	50' South of OSL-96A	CF	X	X	X
OSL-96D	SS02	3-12"	X	8/28/2006			X		
OSL-96E	SS01	0-3"	X	8/28/2006	50' West of OSL-96A		X		
OSL-96E	SS02	3-12"	X	8/28/2006			X		
OSL-97A	SS01	0-3"	X	8/30/2005	50' North of OSL-97C		X		
OSL-97D	SS02	3-12"	X	9/12/2006	Phase I location OSL-97A at depth		X		
OSL-97B	SS01	0-3"	X	8/30/2005			X		
OSL-97C	SS02	3-12"	X	9/12/2006	Phase I location OSL-97B at depth	CF	X	X	X
OSL-97E	SS01	0-3"	X	9/12/2006	50' East of OSL-97C		X		
OSL-97E	SS02	3-12"	X	9/12/2006			X		
OSL-97F	SS01	0-3"		Not Collected	Gravel - no substantial soil present	FDup of OSL-97F/SS02	Not Sampled		
OSL-97F	SS02	3-12"	X	9/12/2006	50' South of OSL-97C		X		
OSL-1012	SS02	3-12"		9/12/2006			X		
OSL-97G	SS01	0-3"	X	9/12/2006	50' West of OSL-97C		X		
OSL-97G	SS02	3-12"		9/12/2006			X		
OSL-98	SS01	0-3"	X	8/30/2005			X		
OSL-99	SS01	0-3"	X	8/31/2005			X		
OSL-100	SS01	0-3"	X	8/22/2006			X		
OSL-100	SS02	3-12"	X	8/22/2006			X		

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							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-101	SS01	0-3"	X	8/22/2006			X		
OSL-101	SS02	3-12"	X	8/22/2006			X		
OSL-102	SS01	0-3"	X	8/22/2006			X		
OSL-102	SS02	3-12"	X	8/22/2006			X		
OSL-103	SS01	0-3"	X	8/22/2006		CF, LDup, MS/MSD FDup of OSL-103/SS02	X		
OSL-103	SS02	3-12"	X	8/22/2006			X	X	X
OSL-1013	SS02	3-12"		8/22/2006			X	X	X
OSL-112	SS01	0-3"		No Access			Not Sampled		
OSL-113	SS01	0-3"	X	8/31/2006		CF	X	X	X
OSL-116	SS01	0-3"	X	9/6/2006			X		
Distance Sampling Locations									
OSL-01	SS01	0-3"	X	8/30/2005		CF	X	X	X
OSL-02	SS01	0-3"	X	8/30/2005			X		
OSL-03	SS01	0-3"	X	8/25/2005			X		
OSL-04	SS01	0-3"	X	8/30/2005			X		
OSL-05	SS01	0-3"		No Access			Not Sampled		
OSL-06	SS01	0-3"	X	8/30/2005			X		
OSL-42	SS01	0-3"		No Access			Not Sampled		
OSL-43	SS01	0-3"		No Access			Not Sampled		
OSL-44	SS01	0-3"		No Access			Not Sampled		
OSL-45	SS01	0-3"		No Access			Not Sampled		
OSL-50	SS01	0-3"	X	8/31/2005		CF	X	X	X
OSL-1000	SS01	0-3"		8/31/2005		CF, FD of OSL-50/SS01	X	X	X
OSL-51	SS01	0-3"		No Access			Not Sampled		
OSL-52	SS01	0-3"		No Access			Not Sampled		
OSL-53	SS01	0-3"	X	8/28/2005			X		
OSL-86	SS01	0-3"		No Access			Not Sampled		
OSL-87	SS01	0-3"		No Access			Not Sampled		
OSL-88	SS01	0-3"		No Access			Not Sampled		
OSL-89	SS01	0-3"		No Access			Not Sampled		
OSL-90	SS01	0-3"		No Access			Not Sampled		
OSL-91	SS01	0-3"		No Access			Not Sampled		
OSL-92	SS01	0-3"		No Access			Not Sampled		
OSL-93	SS01	0-3"		No Access			Not Sampled		

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							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
OSL-104	SS01	0-3"	X	8/31/2006			X		
OSL-105	SS01	0-3"	X	8/31/2006			X		
OSL-106	SS01	0-3"	X	8/31/2006			X		
OSL-107	SS01	0-3"	X	8/31/2006			X		
OSL-108	SS01	0-3"	X	8/31/2006			X		
OSL-109	SS01	0-3"	X	8/31/2006		FDup of OSL-109/SS01	X		
OSL-1014	SS01	0-3"		8/31/2006			X		
OSL-110	SS01	0-3"		No Access			Not Sampled		
OSL-111	SS01	0-3"	X	8/31/2006			X		
OSL-114	SS01	0-3"	X	9/12/2006			X		
OSL-115	SS01	0-3"		No Access			Not Sampled		
Targeted Off-Site Sampling Locations ²									
TSL-01	SS01	0-3"	X	8/30/2005			X		
TSL-02	SS01	0-3"	X	8/30/2005			X		
TSL-03	SS01	0-3"	X	8/30/2005			X		
TSL-04	SS01	0-3"	X	8/30/2005		CF	X	X	X
TSL-1000	SS01	0-3"		8/30/2005		CF, FD of TSL-04/SS01	X	X	X
TSL-05	SS01	0-3"	X	8/29/2005			X		
TSL-05A	SS02	3-12"	X	9/8/2006	Phase I location TSL-05 at depth	CF	X	X	X
TSL-05B	SS01	0-3"	X	9/8/2006	50' North of TSL-05A		X		
TSL-05B	SS02	3-12"	X	9/8/2006			X		
TSL-05C	SS01	0-3"	X	9/8/2006	50' East of TSL-05A		X		
TSL-05C	SS02	3-12"	X	9/8/2006			X		
TSL-05D	SS01	0-3"	X	9/8/2006	50' South of TSL-05A		X		
TSL-05D	SS02	3-12"	X	9/8/2006			X		
TSL-1001	SS02	3-12"		9/8/2006		FDup of TRB-10D/SS02	X		
TSL-05E	SS01	0-3"	X	9/8/2006	50' West of TSL-05A		X		
TSL-05E	SS02	3-12"	X	9/8/2006			X		
TSL-06	SS01	0-3"	X	8/31/2005		LD	X		
TSL-07	SS01	0-3"	X	8/31/2005			X		
TSL-08	SS01	0-3"		No Access			Not Sampled		
TSL-09	SS01	0-3"	X	8/30/2006	(b) (6)		X		
TSL-09	SS02	3-12"	X	8/30/2006			X		

Table 2-4
Off-Site Surface Soil Sample Collection Summary

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
Tribal Sampling Locations ³									
TRB-01	SS01	0-3"	X	8/31/2005			X		
TRB-02	SS01	0-3"		No Access			Not Sampled		
TRB-03	SS01	0-3"		No Access			Not Sampled		
TRB-04	SS01	0-3"	X	8/30/2005			X		
TRB-05	SS01	0-3"		No Access			Not Sampled		
TRB-06	SS01	0-3"		No Access			Not Sampled		
TRB-07	SS01	0-3"		No Access			Not Sampled		
TRB-08	SS01	0-3"	X	8/30/2005			X		
TRB-08A	SS02	3-12"	X	9/12/2006	Phase I location TRB-08 at depth		X		
TRB-08B	SS01	0-3"	X	9/12/2006	50' North of TRB-08A	CF FDup of TRB-08B/SS01	X	X	X
TRB-1001	SS01	0-3"		9/12/2006			X	X	X
TRB-08B	SS02	3-12"	X	9/12/2006			X		
TRB-08C	SS01	0-3"	X	9/12/2006	50' East of TRB-08A		X		
TRB-08C	SS02	3-12"	X	9/12/2006			X		
TRB-08D	SS01	0-3"		No Access	50' South of TRB-08A		Not Sampled		
TRB-08D	SS02	3-12"		No Access			Not Sampled		
TRB-08E	SS01	0-3"	X	9/12/2006	50' West of TRB-08A		X		
TRB-08E	SS02	3-12"	X	9/12/2006			X		
TRB-09	SS01	0-3"	X	8/30/2005	Phase I location TRB-09 at depth	LD	X		
TRB-09A	SS02	3-12"	X	9/11/2006			X		
TRB-09B	SS01	0-3"	X	9/11/2006	50' North of TRB-09A	CF, LDup, MS/MSD	X	X	X
TRB-09B	SS02	3-12"	X	9/11/2006			X		
TRB-09C	SS01	0-3"		No Access	50' East of TRB-09A.		Not Sampled		
TRB-09C	SS02	3-12"		No Access			Not Sampled		
TRB-09D	SS01	0-3"		No Access	50' South of TRB-09A		Not Sampled		
TRB-09D	SS02	3-12"		No Access			Not Sampled		
TRB-09E	SS01	0-3"	X	9/11/2006	50' West of TRB-09A	FDup of TRB-09E/SS01	X		
TRB-1002	SS01	0-3"		9/11/2006			X		
TRB-09E	SS02	3-12"	X	9/11/2006			X		
TRB-09DW	GRAB	0-3"	X	8/30/2005	Driveway Sample		X		
TRB-09DWA	SS02	3-12"		Not Collected	Phase I location TRB-09DW at depth		Not Sampled		
TRB-09DWA	SS03	1-2'		Not Collected	Phase I location TRB-09DW at depth		Not Sampled		

Table 2-4
Off-Site Surface Soil Sample Collection Summary

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Depth Interval	Field XRF ¹	Date Collected	Additional Location Details	QA/QC Notes	Analyses		
							Lab XRF for As, Cd, Pb, & Zn	Confirmation ICP for As, Cd, Pb, & Zn	TCLP for As, Cd, & Pb
TRB-09DWB	SS01	0-3"		Not Collected	Adjacent to Driveway			Not Sampled	
TRB-09DWB	SS02	3-12"		Not Collected				Not Sampled	
TRB-09DWC	SS01	0-3"		Not Collected	Adjacent to Driveway			Not Sampled	
TRB-09DWC	SS02	3-12"		Not Collected				Not Sampled	
TRB-09DWD	SS01	0-3"		Not Collected	Adjacent to Driveway			Not Sampled	
TRB-09DWD	SS02	3-12"		Not Collected				Not Sampled	
TRB-09DWE	SS01	0-3"		Not Collected	Adjacent to Driveway			Not Sampled	
TRB-09DWE	SS02	3-12"		Not Collected				Not Sampled	
TRB-10	SS01	0-3"	X	8/29/2005		CF	X	X	X
TRB-1000	SS01	0-3"		8/29/2005		CF, FD of TRB-10/SS01	X	X	X
TRB-10A	SS02	3-12"	X	9/7/2006	Phase I location TRB-10 at depth	CF	X	X	X
TRB-10B	SS01	0-3"	X	9/7/2006	50' North of TRB-10A		X		
TRB-10B	SS02	3-12"	X	9/7/2006			X		
TRB-10C	SS01	0-3"	X	9/7/2006	50' East of TRB-10A		X		
TRB-10C	SS02	3-12"	X	9/7/2006			X		
TRB-10D	SS01	0-3"	X	9/7/2006	50' South of TRB-10A		X		
TRB-10D	SS02	3-12"	X	9/7/2006			X		
TRB-10E	SS01	0-3"	X	9/7/2006	50' West of TRB-10A		X		
TRB-10E	SS02	3-12"	X	9/7/2006			X		
TRB-1003	SS02	3-12"		9/7/2006		FDup of TRB-10E/SS02	X		
TRB-11	SS01	0-3"		9/13/2005	Cherokee Nation Housing Authority		X		

Notes:

- 1 = Field XRF not applicable for field duplicates.
- 2 = Targeted sampling locations include schools, play grounds, parks, day care centers, etc.
- 3 = Samples collected from tribal member properties based upon information received from ITEC.

CF = Confirmation Sample

FD = Field Duplicate

ICP = Inductively Coupled Plasma

ITEC = Inter-Tribal Environmental Council

LD = Laboratory Duplicate

MS/MSD = Matrix Spike/Matrix Spike Duplicate

QA = Quality Assurance

QC = Quality Control

TCLP = Toxicity Characteristic Leaching Procedure

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

Table 2-5
Surface Water Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Date Collected	QA/QC Notes	Analyses	
				ICP for As, Cd, Pb, & Zn	General Chemistry ¹
Background Location - (b) (6)					
BG-OFF-01	SW01	9/29/2005		X	X
BG-OFF-1000	SW01	9/29/2005	FD of BG-OFF-01/SW01	X	X
Background Location - City Lake					
BG-OFF-02	SW01	9/13/2005		X	X
Background Location - (b) (6)					
FP-01	SW01	9/20/2006		X	X
FP-02	SW01	9/20/2006	MS/MSD	X	X
FP-1000	SW01	9/20/2006	FD of FP-02/SW01	X	X
FP-03	SW01	9/20/2006		X	X
On-Site Location - Cistern					
CST-01	SW01	5/10/2006	MS/MSD	X	X
On-Site Location - Pond 1					
PD1-01	SW01	7/20/2005		X	X
PD1-02	SW01	7/20/2005	MS/MSD ²	X	X
PD1-02	SW01Rep1	7/20/2005		X	X
PD1-02	SW01Rep2	7/20/2005		X	X
PD1-02	SW02	5/10/2006		X	X
PD1-1000	SW02	5/10/2006	FD of PD1-02/SW02	X	X
PD1-02A	SW01	9/13/2005	MS/MSD	X	X
PD1-03	SW01	7/20/2005		X	X
On-Site Location - Pond 2					
PD2-01	SW01	7/20/2005		X	X
PD2-02	SW01	7/20/2005		X	X
On-Site Location - Pond 3					
PD3-01	SW01	7/20/2005	FD of PD3-01/SW01	X	X
PD3-1000	SW01	7/20/2005		X	X
PD3-02	SW01	7/20/2005		X	X
On-Site Location - Pond 4					
PD4-01	SW02	5/10/2006		X	X
On-Site Location - Pond 5					
PD5-01	SW02	5/10/2006		X	X
On-Site Location - Mid-Site Ravine					
MSR-01	SW02	5/8/2006		X	X
MSR-02	SW02	5/8/2006	FD of MSR-02/SW02	X	X
MSR-1000	SW02	5/8/2006		X	X
MSR-03	SW02	5/8/2006		X	X
Strip Mine Pit					
SMP-01	SW01	7/19/2005		X	X
SMP-02	SW01	7/19/2005		X	X
SMP-03	SW01	7/19/2005	FD of SMP-03/SW01	X	X
SMP-1000	SW01	7/19/2005		X	X
SMP-04	SW01	7/19/2005		X	X
SMP-05	SW01	7/19/2005		X	X
SMP-06	SW01	7/19/2005		X	X
Drainage for Right-of-Way Old US 169 / Railroad					
OFF-01	SW02	5/10/2006		X	X
OFF-02	SW01	7/20/2005		X	X
OFF-02	SW02	5/10/2006		X	X
OFF-03	SW02	5/10/2006		X	X

Table 2-5
Surface Water Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Date Collected	QA/QC Notes	Analyses	
				ICP for As, Cd, Pb, & Zn	General Chemistry ¹
Drainage for Right-of-Way Old US 169 / Railroad (continued)					
OFF-04	SW01	7/20/2005	MS/MSD ²	X	X
OFF-04	SW01Rep1	7/20/2005		X	X
OFF-04	SW01Rep2	7/20/2005		X	X
OFF-04	SW02	5/10/2006		X	X
OFF-10	SW02	5/9/2006		X	X
OFF-16	SW01	5/9/2006		X	X
OFF-17	SW01	5/9/2006		X	X
OFF-18	SW01	5/9/2006		X	X
OFF-19	SW01	5/9/2006		X	X
Drainage for (b) (6)			(North)		
OFF-05	SW02	5/10/2006		X	X
OFF-06	SW02	5/10/2006		X	X
OFF-07	SW02	5/10/2006		X	X
OFF-08	SW02	5/10/2006		X	X
OFF-09	SW01	7/21/2005	FD of OFF-14/SW01	X	X
OFF-09	SW02	5/9/2006		X	X
OFF-14	SW01	5/9/2006		X	X
OFF-1001	SW01	5/9/2006		X	X
OFF-15	SW01	5/9/2006		X	X
OFF-20	SW01	5/9/2006		X	X
OFF-21	SW01	Not Collected		Not Sampled	
Drainage for (b) (6)			(South)		
OFF-11	SW02	5/10/2006		X	X
OFF-12	SW02	5/10/2006		X	X
OFF-13	SW02	5/10/2006		X	X

Notes:

- 1 = General water chemistry parameters for lab analysis include: alkalinity, chemical oxygen demand (COD), chloride, nitrate as nitrogen, sulfate, and total organic carbon (TOC). Specific conductivity, pH, and temperature measured in the field.
- 2 = Samples marked and submitted for MS/MSD or LD to lab. Lab inadvertently did not spike these samples. Therefore, results represent replicate measurements of the same sample.

FD = Field Duplicate

ICP = Inductively Coupled Plasma

MS/MSD = Matrix Spike/Matrix Spike Duplicate

QA = Quality Assurance

QC = Quality Control

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

Table 2-6
Sediment Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Background Location - (b) (6)							
BG-OFF-01	SD01	0-6"	9/29/2005	FD of BG-OFF-01/SD01	X		
BG-OFF-1000	SD01	0-6"	9/29/2005		X		
Background Location - City Lake							
BG-OFF-02	SD01	0-6"	9/13/2005		X		
Background Location - (b) (6) Farm Pond							
FP-01	SD01	0-6"	9/20/2006		X		
FP-02	SD01	0-6"	9/20/2006	Confirmation, MS/MSD, LD	X	X	X
FP-1000	SD01	0-6"	9/20/2006	FD of FP-02/SD01	X	X	X
FP-03	SD01	0-6"	9/20/2006		X		
On-Site Location - Cistern							
CST-01	SD01	0-6"	Not Collected		Not Sampled		
On-Site Location - Pond 1							
PD1-01	SD01	0-6"	7/20/2005		X		
PD1-02	SD01	0-6"	7/20/2005	MS/MSD ¹ , CF	X		X
PD1-02	SD01Rep1	0-6"	7/20/2005		X		X
PD1-02	SD01Rep2	0-6"	7/20/2005		X		X
PD1-02	SD01CF	0-6"	7/20/2005	MS/MSD ¹		X	
PD1-02	SD01Rep1CF	0-6"	7/20/2005			X	
PD1-02	SD01Rep2CF	0-6"	7/20/2005			X	
PD1-03	SD01	0-6"	7/20/2005	Overcal	X	Zn	
On-Site Location - Pond 2							
PD2-01	SD01	0-6"	7/20/2005		X		
PD2-02	SD01	0-6"	7/20/2005	Overcal	X	Zn	
On-Site Location - Pond 3							
PD3-01	SD01	0-6"	7/20/2005	FD of PD3-01/SD01	X		
PD3-1000	SD01	0-6"	7/20/2005		X		
PD3-02	SD01	0-6"	7/20/2005		X	Zn	
On-Site Location - Pond 4							
PD4-01	SD01	0-6"	7/19/2005	Overcal	X	Zn	
On-Site Location - Pond 5							
PD5-01	SD01	0-6"	7/19/2005		X		
On-Site Location - Mid-Site Ravine							
MSR-01	SD01	0-6"	7/19/2005	Overcal	X	Zn	
MSR-02	SD01	0-6"	7/19/2005	Overcal	X	Zn	
MSR-03	SD01	0-6"	7/19/2005	Overcal	X	Pb, Zn	
Strip Mine Pit							
SMP-01	SD01	0-6"	7/19/2005		X		
SMP-02	SD01	0-6"	7/19/2005		X		
SMP-03	SD01	0-6"	7/19/2005	CF	X		X
SMP-1000	SD01	0-6"	7/19/2005	FD of SMP-03/SD01	X		X
SMP-03	SD01CF	0-6"	7/19/2005			X	
SMP-1000	SD01CF	0-6"	7/19/2005	FD of SMP-1000/SD01CF		X	
SMP-04	SD01	0-6"	7/19/2005		X		
SMP-05	SD01	0-6"	7/19/2005		X		
SMP-06	SD01	0-6"	7/19/2005		X		

Table 2-6
Sediment Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					Lab XRF for As, Cd, Pb, & Zn	ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Drainage for Right-of-Way Old US 169 / Railroad							
OFF-01	SD01	0-6"	7/20/2005		X		
OFF-02	SD01	0-6"	7/20/2005	Overcal	X	Zn	
OFF-03	SD01	0-6"	7/20/2005		X		
OFF-04	SD01	0-6"	7/20/2005	MS/MSD ¹ , Overcal	X	Zn	
OFF-04	SD01Rep1	0-6"	7/20/2005		X		
OFF-04	SD01Rep2	0-6"	7/20/2005		X		
OFF-10	SD01	0-6"	7/20/2005	CF	X	X	X
OFF-10	SD01CF	0-6"	7/20/2005				
OFF-16	SD01	0-6"	5/9/2006	Overcal	X	Zn	
OFF-17	SD01	0-6"	5/9/2006		X		
OFF-18	SD01	0-6"	5/9/2006		X		
OFF-19	SD01	0-6"	5/9/2006	Overcal	X	Zn	
Drainage for (b) (6)							
OFF-05	SD01	0-6"	7/20/2005		X		
OFF-06	SD01	0-6"	7/20/2005		X		
OFF-07	SD01	0-6"	7/20/2005	Overcal	X	Zn	
OFF-08	SD01	0-6"	7/20/2005	FD of OFF-08/SD01, Overcal	X	Zn	
OFF-1000	SD01	0-6"	7/20/2005		X		
OFF-09	SD01	0-6"	7/21/2005		X		
OFF-14	SD01	0-6"	5/9/2006	Overcal	X	Zn	
OFF-1001	SD01	0-6"	5/9/2006	FD of OFF-14/SD01, Overcal	X	Zn	
OFF-15	SD01	0-6"	5/9/2006	Confirmation, MS/MSD	X	X	X
OFF-20	SD01	0-6"	5/9/2006		X		
OFF-21	SD01	0-6"	Not Collected		Not Sampled		
Drainage for (b) (6)							
OFF-11	SD01	0-6"	7/20/2005		X		
OFF-12	SD01	0-6"	7/20/2005		X		
OFF-13	SD01	0-6"	7/20/2005		X		

Notes:

1 = Samples marked and submitted for MS/MSD or LD to lab. Lab inadvertently did not spike these samples. Therefore, results represent replicate measurements of the same sample.

CF = Confirmation Sample

FD = Field Duplicate

ICP = Inductively Coupled Plasma

MS/MSD = Matrix Spike/Matrix Spike Duplicate

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

Overcal = Results in excess of XRF calibration range noted. Reanalysis using ICP for the impacted constituent is noted in the column marked "ICP for As, Cd, Pb, & Zn."

QA = Quality Assurance

QC = Quality Control

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

Table 2-7
Groundwater Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					ICP for As, Cd, Pb, & Zn Unfiltered	ICP for As, Cd, Pb, & Zn Filtered	General Water Chemistry ¹
Temporary Piezometer Groundwater Samples							
PZ-01	GW01	Top Bed	9/13/2005		X	NS	NS
PZ-02	GW01	Top Bed	9/13/2005		X	NS	NS
PZ-03	GW01	Top Bed	9/13/2005		X	NS	X ²
PZ-04	GW01	Top Bed	9/13/2005		X	NS	X ²
PZ-05	GW01	Top Bed	9/13/2005		X	NS	NS
PZ-06	GW01	Top Bed	9/13/2005		X	NS	NS
PZ-07	GW01	Top Bed	9/13/2005		X	NS	X
PZ-08	GW01	Top Bed	9/13/2005		X	NS	X ²
PZ-09	GW01	Top Bed	9/13/2005	MS/MSD	X	NS	X
PZ-1001	GW01	Top Bed	9/13/2005	FD of PZ-09/GW01	X	NS	X
Upgradient Monitoring Well Groundwater Samples							
MW-01	GW01		9/29/2005	Upgradient Well	X	NS	X
MW-01	GW02		5/11/2006	Upgradient Well	NS	X	NS
MW-01	GW03		9/19/2006	Upgradient Well	X	X	X ³
Monitoring Well Groundwater Samples							
MW-02	GW01		9/29/2005		X	NS	NS
MW-02	GW02		5/12/2006		NS	X	X
MW-1000	GW02		5/12/2006	FD of MW-02/GW02	NS	NS	X
MW-02	GW03		9/19/2006		X	X	X ³
MW-03	GW01		9/29/2005		X	NS	X
MW-1000	GW01		9/29/2005	FD of MW-03/GW01	X	NS	X
MW-03	GW02		5/12/2006		NS	X	NS
MW-1001	GW02		5/12/2006	FD of MW-03/GW02	NS	X	NS
MW-03	GW03		9/19/2006		X	X	X
MW-1000	GW03		9/19/2006	FD of MW-03/GW03	X	X	X
MW-04	GW01		9/29/2005	MS/MSD	X	NS	X
MW-04	GW02		5/12/2006	MS/MSD	NS	X	NS
MW-04	GW03		9/19/2006	MS/MSD	X	X	X
MW-04D	GW03		9/19/2006		X	X	X
MW-05	GW01		9/29/2005		X	X	NS
MW-05	GW02		5/12/2006	MS/MSD	NS	NS	X
MW-05	GW03		9/19/2006		X	X	X
MW-06	GW03		9/19/2006		X	X	X
Residential Well Groundwater Samples							
RW-01	GW01		10/3/2005		X	NS	X
RW-01	GW02		5/12/2006		NS	X	NS
RW-01	GW03		9/20/2006		X	X	X

Notes:

- 1 = General water chemistry parameters for lab analysis include: alkalinity, chemical oxygen demand (COD), chloride, nitrate as nitrogen, sulfate, and total organic carbon (TOC). Specific conductivity, pH, temperature, and turbidity measured in the field.
- 2 = Complete general water chemistry parameters were not collected due to insufficient volume of water, only TOC was collected.
- 3 = Complete general water chemistry parameters were not collected due to insufficient volume of water, TOC was not collected.

Table 2-7
Groundwater Sample Collection Summary
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Point	Sample Designator	Depth Interval	Date Collected	QA/QC Notes	Analyses		
					ICP for As, Cd, Pb, & Zn Unfiltered	ICP for As, Cd, Pb, & Zn Filtered	General Water Chemistry ¹

Notes:

As = Arsenic
Cd = Cadmium
CF = Confirmation Sample
FD = Field Duplicate
ICP = Inductively Coupled Plasma
MS/MSD = Matrix Spike/Matrix Spike Duplicate
NS = Not Sampled
Pb = Lead
QA = Quality Assurance
QC = Quality Control
TCLP = Toxicity Characteristic Leaching Procedure
Top Bed = Piezometers installed at the top of bedrock
XRF = X-Ray Fluorescence Spectroscopy
Zn = Zinc

Table 2-8
Ecological/Vegetation Sample Collection Summary

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Comment	Sample Point ²	Sample Designator	Description	Date Collected	QA/QC Notes	Analyses ¹	
						ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Background Ecological Samples							
Oxley Nature Center	OX	WBB	Berries - Washed	6/16/2004		X	
	OX	UGB	Berries - Unwashed Green	6/16/2004		X	
	OX	UBB	Berries - Unwashed	6/16/2004		X	
	OX	WBB-L	Leaves - Washed	6/16/2004		X	
	OX	UBB-L	Leaves - Unwashed	6/16/2004		X	
	OX	WBB-R	Roots - Washed	6/16/2004		X	
	OX	BB-S	Soil	6/16/2004		X	
	BG-EC-01	BR01W	Berries - Washed	6/28/2005	FD of BG-EC-01/BR01U	X	
	BG-EC-01	BR01U	Berries - Unwashed	6/28/2005		X	
	BG-EC-01	BR01UDUP	Berries - Unwashed	6/28/2005		X	
	BG-EC-01	LV01W	Leaves - Washed	6/28/2005		X	
	BG-EC-01	LV01U	Leaves - Unwashed	6/28/2005		X	
	BG-EC-01	RT01W	Roots - Washed	6/28/2005		X	
	BG-EC-01	SS02	Soils	6/28/2005		X	
	BG-EC-01	BR03W	Berries - Washed	--	FD of BG-EC-01/BR03	Not Collected ³	
	BG-EC-01	BR03U	Berries - Unwashed	--		Not Collected ³	
	BG-EC-01	BR03UDUP	Berries - Not Washed	--		Not Collected ³	
	BG-EC-01	Rinsate03	Collected Wash/Rinse Water	--		Not Collected ³	
Ecological Samples - DEQ 2004 Samples							
TFM Property	TFM	WBB-1	Berries - Washed	6/16/2004		X	
	TFM	UGB-1	Berries - Unwashed	6/16/2004		X	
	TFM	UBB-1	Berries - Unwashed	6/16/2004		X	
	TFM	WBB-L-1	Leaves - Washed	6/16/2004		X	
	TFM	UBB-L-1	Leaves - Unwashed	6/16/2004		X	
	TFM	WBB-R-1	Roots - Washed	6/16/2004		X	
	TFM	BB-S-1	Soil	6/16/2004		X	
	TFM	BB-W-1	Waste	6/16/2004		X	X
	TFM	WBB-2	Berries - Washed	6/22/2004		X	
	TFM	UGB-2	Berries - Unwashed	6/22/2004		X	
	TFM	UBB-2	Berries - Unwashed	6/22/2004		X	
	TFM	WBB-L-2	Leaves - Washed	6/22/2004		X	
	TFM	UBB-L-2	Leaves - Unwashed	6/22/2004		X	
	TFM	WBB-R-2	Roots - Washed	6/22/2004		X	
	TFM	BB-S-2	Soil	6/22/2004		X	
	TFM	BB-W-2	Waste	6/22/2004		X	X

Table 2-8
Ecological/Vegetation Sample Collection Summary

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Comment	Sample Point ²	Sample Designator	Description	Date Collected	QA/QC Notes	Analyses ¹	
						ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb
Ecological Samples - DEQ 2004 Samples							
(b) (6) Property	BM	WBB	Berries - Washed	6/16/2004		X	
	BM	UGB	Berries - Unwashed	6/16/2004		X	
	BM	UBB	Berries - Unwashed	6/16/2004		X	
	BM	WBB-L	Leaves - Washed	6/16/2004		X	
	BM	UBB-L	Leaves - Unwashed	6/16/2004		X	
	BM	WBB-R	Roots - Washed	6/16/2004		X	
	BM	BB-S	Soil	6/16/2004		X	
Ecological Samples - Phase I							
(b) (6) Property	EC-01	BR02W	Berries - Washed	6/28/2005		X	
	EC-01	BR02U	Berries - Unwashed	6/28/2005		X	
	EC-01	LV02W	Leaves - Washed	6/28/2005		X	
	EC-01	LV02U	Leaves - Unwashed	6/28/2005		X	
	EC-1000	LV02U	Leaves - Unwashed	6/28/2005	FD of EC-01/LV02U	X	
	EC-01	RT02W	Roots - Washed	6/28/2005		X	
	EC-01	SS02	Root Area Soils	6/28/2005		X	
TFM Property	EC-02	BR02W	Berries - Washed	6/28/2005		X	
	EC-02	BR02U	Berries - Unwashed	6/28/2005		X	
	EC-02	LV02W	Leaves - Washed	6/28/2005		X	
	EC-02	LV02U	Leaves - Unwashed	6/28/2005		X	
	EC-02	RT02W	Roots - Washed	6/28/2005		X	
	EC-02	SS02	Root Area Soils	6/28/2005		X	X
Ecological Samples - Phase II							
(b) (6) Property	EC-01	BR03W	Berries - Washed	7/6/2006		X	
	EC-01	BR03U	Berries - Not Washed	7/6/2006		X	
	EC-01	Rinsate03	Collected Wash/Rinse Water	7/6/2006		X	
	Field Blank	DI	Deionized Water	7/6/2006		X	
TFM Property	EC-02	BR03W	Berries - Washed	7/6/2006		X	
	EC-02	BR03U	Berries - Not Washed	7/6/2006		X	
	EC-02	Rinsate03	Collected Wash/Rinse Water	7/6/2006		X	

Notes:

1 = Vegetation and materials from the root area analyzed for As, Cd, Pb, and Zn by ICP.

TCLP analysis for As, Cd, and Pb only. pH measured for root area soil and waste samples.

2 = Sample point names refer to the following locations:

OX and BG-EC-01 refer to samples collected from the Oxley Nature Center.

TFM and EC-02 refer to samples collected from the Tulsa Fuel and Manufacturing Site.

BM and EC-01 refer to samples collected from a B & R Moore property that is adjacent to the Tulsa Fuel and Manufacturing Site.

Table 2-8
Ecological/Vegetation Sample Collection Summary

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Comment	Sample Point ²	Sample Designator	Description	Date Collected	QA/QC Notes	Analyses ¹	
						ICP for As, Cd, Pb, & Zn	TCLP As, Cd, & Pb

3 = Blackberries were not present at the Oxley Nature Center during the July 2006 sampling event.

FD = Field Duplicate

ICP = Inductively Coupled Plasma

QA = Quality Assurance

QC = Quality Control

As = Arsenic

Cd = Cadmium

Pb = Lead

Zn = Zinc

TCLP = Toxicity Characteristic
Leaching Procedure

Table 2-9
Perimeter Air Monitoring Sample Collection Summary

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Date Collected	Station Location	Prevailing Wind From ²	Analyses Air Quality ¹
Upwind, Background Air Quality Samples					
AQ-02	AR01	8/24/2005	South TFM	SE	X
AQ-02	AR02	8/25/2005	South TFM	SSE	X
AQ-02	AR03	8/26/2005	South TFM	S	X
AQ-01	AR04	8/27/2005	North TFM	NW	X
AQ-01	AR05	8/28/2005	North TFM	NNE	X
AQ-01	AR06	8/29/2005	North TFM	N	X
AQ-01	AR07	8/30/2005	North TFM	NNW	X
Downwind, Investigative Air Quality Samples					
AQ-01	AR01	8/24/2005	North TFM	SE	X
AQ-01	AR02	8/25/2005	North TFM	SSE	X
AQ-01	AR03	8/26/2005	North TFM	S	X
AQ-02	AR04	8/27/2005	South TFM	NW	X
AQ-02	AR05	8/28/2005	South TFM	NNE	X
AQ-02	AR06	8/29/2005	South TFM	N	X
AQ-02	AR07	8/30/2005	South TFM	NNW	X

Notes:

1 = Air Quality analyses include total suspended particulates (TSP), PM10, and Metals (As, Cd, Pb, and Zn).

2 = The background sampling location was determined on a daily basis by the prevailing wind direction. The background location was identified as the station located upwind at the time of sampling. During this sampling event, the background location changed from the southern station (AQ-02) to the northern location (AQ-01) due to a change in the prevailing wind direction as a weather front moved into the area.

As = Arsenic
Cd = Cadmium
Pb = Lead
QA = Quality Assurance
QC = Quality Control
Zn = Zinc

N = north
NNE = north northeast
NNW = north northwest
NW = northwest
S = south
SE = southeast
SSE = south southeast

Table 3-1
Groundwater Elevation Data
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Well	Date Measured	Time Measured	Elevation (feet above MSL)			Field Measurement (feet below TOC)		Water Level
			Ground Surface	Top of Casing	Bottom of Casing	Water Level	Total Depth	Elevation (feet above MSL)
MW-1	9/29/2005	830	674.30	677.30	665.60	13.12	14.80	664.18
	5/8/2006	1625	674.30	677.30	665.60	4.41	14.83	672.89
	9/18/2006	1015	674.30	677.30	665.60	11.76	14.81	665.54
MW-2	9/29/2005	836	652.27	655.35	642.35	15.31	15.99	640.04
	5/8/2006	1640	652.27	655.35	642.35	4.72	16.04	650.63
	9/18/2006	1035	652.27	655.35	642.35	7.18	16.01	648.17
MW-3	9/29/2005	840	649.90	653.16	641.16	8.71	15.52	644.45
	5/8/2006	1645	649.90	653.16	641.16	6.69	15.58	646.47
	9/18/2006	1040	649.90	653.16	641.16	9.22	15.56	643.94
MW-4	9/29/2005	843	648.29	651.29	640.99	5.58	13.17	645.71
	5/8/2006	1650	648.29	651.29	640.99	3.60	13.18	647.69
	9/18/2006	1045	648.29	651.29	640.99	9.00	13.15	642.29
MW-4D	9/18/2006	1050	649.00	651.81	600.61	13.32	54.08	638.49
MW-5	9/29/005	847	651.88	655.01	644.81	12.42	13.29	642.59
	5/8/2006	1655	651.88	655.01	644.81	4.12	13.33	650.89
	9/18/2006	1100	651.88	655.01	644.81	9.10	13.31	645.91
MW-6	9/18/2006	1110	645.60	648.25	639.60	7.76	11.86	640.49

Notes:

MSL = Mean sea level

TOC = Top of casing

NM = Not measured

Table 4-1
Potential Chemical-Specific Screening Levels for Soil
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels				40 CFR 261.24 Toxicity Characteristic Maximum Concentrations (mg/L)
	Ecological (mg/kg)	Industrial Indoor Worker (mg/kg)	Industrial Outdoor Worker (mg/kg)	Residential Soil (mg/kg)	
Target Analyte List Inorganics					
Arsenic	31 ^a	NA	NA	NA	5.0
Arsenic (noncancer endpoint)	NA	610	280	22	NA
Arsenic (cancer endpoint)	NA	3.8	1.8	0.39	NA
Cadmium	0.4 ^a	1,000	560	39	1.0
Lead	15 ^a	800	800	400	5.0
Zinc	120 ^a	100,000	100,000	23,000	NA

Notes:

^aEcological Soil Screening Levels (Eco-SSL). U.S. EPA 2003. <http://www.epa.gov/ecotox/ecossl/>

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

NA - not available

USEPA - United States Environmental Protection Agency

Table 4-2
Potential Chemical-Specific Screening Levels for Surface Water

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic* (µg/L)	Oklahoma Water Quality Criteria			
		Fish & Wildlife Propagation		Human Health	
		Acute (µg/L)	Chronic (µg/L)	Water & Fish Consumption (µg/L)	Fish Consumption (µg/L)
Inorganic Constituents					
Arsenic	190 ^c	360	190	NA	205.0
Cadmium	0.25 ^{c, b}	e(1.128[ln(hardness)]-1.6774	e(0.7852[ln(hardness)]-3.490)	14.49	84.13
Lead	2.5 ^{c, b}	e(1.273[ln(hardness)]-1.460	e(1.273[ln(hardness)]-4.705)	5.0	25.0
Zinc	58.1 ^{c, b}	e(0.8473[ln(hardness)]+0.8604	e(0.8473[ln(hardness)]+0.7614)	NA	NA

Notes:

*All hardness-dependent criteria are based on a 100 mg/L hardness value.

^aBenchmark for waters, pH = 6.5-9.0.

^bCriteria calculated using a hardness value of 50 mg/L based on formula: $Cd=0.909e^{(0.7852[\ln(\text{hardness})]-3.490)}$

^cTexas Surface Water Quality Standards Chronic Criteria (30 TAC 307.6, Table 1, Effective 8/17/00.)

NA - not available

µg/L - micrograms per liter

USEPA - United States Environmental Protection Agency

Table 4-3
Potential Chemical-Specific Screening Levels for Sediment
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels			40 CFR 261.24 Toxicity Characteristic Maximum Concentrations (mg/L)
	Ecological (mg/kg)	Industrial Outdoor Worker (mg/kg)	Residential Soil (mg/kg)	
Inorganic Constituents				
Arsenic	5.9 ^a	NA	NA	5.0
Arsenic (noncancer endpoint)	NA	280	22	NA
Arsenic (cancer endpoint)	NA	1.8	0.39	NA
Cadmium	0.596 ^a	560	39	1.0
Lead	35 ^a	800	400	5.0
Zinc	123 ^a	100,000	23,000	NA

Notes:

^aThreshold Effects Level (TEL) from: Smith, S.L., D.D. MacDonald, K.A. Keenleyside, C.G. Ingersoll, and L.J. Field. 1996a. A Preliminary Evaluation of Sediment Quality Assessment Values for Freshwater Ecosystems. J. Great Lakes Res. 22(3): 624-638.

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

NA - not available

USEPA - United States Environmental Protection Agency

Table 4-4
Potential Chemical-Specific Screening Levels for Groundwater
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Units	MCL	USEPA Region VI
			Human Health Tap Water
Inorganic Constituents			
Arsenic	µg/L	10	NA
Arsenic (noncancer endpoint)	µg/L	NA	NA
Arsenic (cancer endpoint)	µg/L	NA	0.045
Cadmium	µg/L	5	18
Lead ¹	µg/L	15	15
Zinc ²	µg/L	5,000	11,000
Water Quality Parameters			
Specific Conductance	µmhos/cm	NA	NA
pH ²	Std Unit	6.5 - 8.5	NA
Alkalinity, Total	mg/L	NA	NA
Chloride ²	mg/L	250	NA
Nitrate/Nitrite as Nitrogen ³	mg/L	1	1
Sulfate ²	mg/L	250	NA
Chemical Oxygen Demand	mg/L	NA	NA
Total Organic Carbon	mg/L	NA	NA

Notes:

¹MCL listed for lead is an action level.

²MCLs listed for zinc, pH, chloride, and sulfate are Secondary MCLs.

³Nitrate/Nitrite as Nitrogen MCL and Human Health Tap Water Values are for Nitrite, as Nitrogen.

NA - Not Applicable

MCL - Maximum Contaminant Level

µg/L - micrograms per liter

µmhos/cm - micromhos per centimeter

mg/L - milligrams per liter

USEPA - United States Environmental Protection Agency

Table 4-5
Potential Chemical-Specific Screening Levels for Air
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

	USEPA Region VI Human Health Screening Levels ($\mu\text{g}/\text{m}^3$)	National Emissions Standards for Hazardous Air Pollutants ($\mu\text{g}/\text{m}^3$)
Inorganic Constituents		
Arsenic	0.00045	NA
Cadmium	0.0011	NA
Lead	NA	1.5
Zinc	1,100 ^a	NA

Notes:

^aRegion III Risk-Based Criteria for Ambient Air

NA - not available

$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter

USEPA - United States Environmental Protection Agency

Table 4-6
Description of Data Qualifiers
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Qualifier	Description
Qualifiers Added by the Laboratories	
B	Blank contamination. Analyte was found in the associated method blank as well as the sample.
D	Diluted analysis. The result is reported from an analysis that was performed at a secondary dilution.
E	The analyte was detected at a concentration that exceeded the highest calibration standard.
>E	The analyte was detected at a concentration that exceeded the highest calibration standard. The reported value is the highest calibration standard.
J	The compound was detected. The reported concentration is an estimated value, which is typically between the method detection limit (MDL) and reporting limit.
U	The compound was analyzed, but was not detected above the reporting limit.
Qualifiers Assigned during Data Review	
J+	The result is an estimated value and may be biased high.
J-	The result is an estimated value and may be biased low.
J*	The result is an estimated value.
R	The data are unusable. The sample results are rejected due to inability to meet quality control criteria.
U*	The compound was not detected. Results were disregarded as false positive due to blank contamination.
Possible Combinations of Qualifiers (Lab and Data Review)	
BJ*	The analyte was detected in the method blank, and the result should be considered estimated due to potential for contamination.
BU*	The analyte was detected in the method blank, and the result should be considered nondetect (i.e., false positive) due to contamination.
JBU*	The analyte was detected in the method blank at a concentration less than the reporting limit, and the result should be considered nondetect (i.e., false positive) due to contamination.
JU*	The analyte was detected at a concentration less than the reporting limit, and the result should be considered nondetect (i.e., false positive) due to contamination.
UJ-	The analyte was not detected above the reporting limit. However, the reporting limit is an approximate value and may be biased low.
UJ*	The analyte was not detected above the reporting limit. However, the reporting limit is an approximate value.
UR	The analyte was not detected above the reporting limit. However, the data are unusable/rejected due to inability to meet quality control criteria.

Table 4-7
Regional Background Data for Metals in Soil
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Soil or Location	Background Concentration (mg/kg)								Source	Author(s)
	Arsenic		Cadmium		Lead		Zinc			
	range	average	range	average	range	average	range	average		
Dennis Soil	NA	NA	NA	NA	15-42	27	50-89	69	"Factors influencing heavy metal distribution in six Oklahoma benchmark soils" in Soil Science Society of America Journal. January-February 1997.	B.D. Lee, B.J. Carter, N.T. Basta, B. Weaver
Adjacent counties	3.4-6.4	5.4	NA	NA	10	10	ND	ND	"Element concentrations in soils and other surficial materials of the conterminous United States", USGS Professional Paper 1270. 1984.	H.T. Shacklette, J.G. Boerngen
Northeast Oklahoma	5.4-8.3	7.0	NA	NA	10.9-17.6	13.0	42-60	54	"Geochemical landscapes of the conterminous United States - New map persentations for 22 elements", USGS Professional Paper 1648. November 2001.	N. Gustavsson, B. Bolviken, D.B. Smith, R.C. Severson
National Average	1-50	5.0	0.01-0.70	0.06	2-200	10	10-300	50	"Behavior of Metals in Soils" in US EPA Ground Water Issue 540/S-92/018. October 1992.	J.E. McLean, B.E. Bledsoe
Local off-site test results	7.2-8.1	7.7	2.8-4.2	3.5	191-193	192	525-534	530	"Site Inspection Report, Tulsa Fuel & Manufacturing, Tulsa County OK" Department of Environmental Quality. 1994.	D.L. Datin, R.R. Kottke, C. Sharp
Northeast of Coal Mine, sandy clay	NA	17	NA	ND	NA	53	NA	187	"Brownfields Final Report, Collinsville Strip Mine Site, OK" by Fluor Daniel, Inc. for the US EPA. January 1997.	M. Lemma, S. Dickson
Local off-site test results	4.2-25.3	12.0	0.77-5.9	2.44	39.4-379	156	169-1280	479	"Focused Remedial Investigation, Collinsville Smelter Site" Table 4-1. January 2001.	Exponent

mg/kg = milligrams per kilogram

NA = Not Available

ND = Not Detected

USGS = United States Geological Survey

US EPA = United States Environmental Protection Agency

OK = Oklahoma

Table 4-8
Background Soil Results

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs											
BG-OSL-01/SS01	0 - 0.25	Dup BG-OSL-07/SS01	mg/kg	10 U	10	10 U	2 U	22	40	123	93
BG-OSL-02/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	20 U J-	--	107	--
BG-OSL-03/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
BG-OSL-04/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	20 U	--	99.5	--
BG-OSL-05/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	20 U	--	64	--
BG-OSL-06/SS01	0 - 0.25		mg/kg	10 U	10 U	10 U	1 U	20 U	22	113	67
BG-OSL-07/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	22.4	--	120	--
BG-OSL-1000/SS01	0 - 0.25		mg/kg	10 U	--	10 U	--	20.1	--	110	--
BG-SP-01/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	21	--	99	--
BG-SP-02/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U	--	154	--
BG-SP-03/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
BG-SP-04/SS01	0 - 0.5		mg/kg	10 U	10 U	10 U	1 U	20 U	12	77.7	45
BG-SP-05/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U	--	57.4	--
BG-SP-06/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U	--	122	--
BG-SP-07/SS01	0 - 0.5		mg/kg	10 U	--	10 U	--	28.6	--	196	--
0.5 - 2 ft bgs											
BG-SP-01/SS02	0.5 - 2	Dup BG-SP-05/SS02	mg/kg	10 U	16	10 U	1 U	20 U	14	64	41
BG-SP-02/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	50	--
BG-SP-03/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
BG-SP-04/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	71.8	--
BG-SP-05/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	58.1	--
BG-SP-1000/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	55.8	--
BG-SP-06/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	96.5	--
BG-SP-07/SS02	0.5 - 2		mg/kg	10 U	--	10 U	--	20 U	--	120	--
2 - 4 ft bgs											
BG-SP-01/SS03	2 - 4		mg/kg	10 U	--	10 U	--	20 U	--	35	--
BG-SP-02/SS03	2 - 4		mg/kg	10 U	--	10 U	--	20 U	--	72	--
BG-SP-03/SS03	2 - 4		mg/kg	10 U	--	10 U	--	20 U	--	59.7	--
BG-SP-04/SS03	2 - 4		mg/kg	10 U	--	10 U	--	34.7	--	115	--
BG-SP-05/SS03	2 - 4		mg/kg	10 U	--	10 U	--	20 U	--	56.6	--
BG-SP-07/SS03	2 - 4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--

Table 4-8
Background Soil Results

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Background Statistics	Depth (ft bgs)	Units	Arsenic		Cadmium		Lead		Zinc	
			UCL	MAX	UCL	MAX	UCL	MAX	UCL	MAX
USEPA Region VI Ecological			31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker			3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker			1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil			0.39	0.39	39	39	400	400	23,000	23,000
Summary Statistics										
SS-01 Interval	0.0 - 0.5	mg/kg	6.67	10	1 U	1 U	17.1	40	103	196
SS-02 Interval	0.5 - 2.0	mg/kg	9.62	16	1 U	1 U	11.68	14	92.2	120
SS-03 Interval	2.0 - 4.0	mg/kg	10 U	10 U	10 U	10 U	32.1	34.7	86.6	115
Comprehensive	0.0 - 4.0	mg/kg	6.31	16	1 U	1 U	16.8	40	94.9	196

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

MAX = Maximum detected concentration from depth interval indicated.

mg/kg = milligrams per kilogram

ND = Non-detect

UCL = Upper Confidence Limit

XRF = X-Ray Fluorescence Spectroscopy

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs											
PZ-04/SS01	0-0.5	Dup of SP-01/SS01	mg/kg	17	--	10	--	230	--	1,190	--
SP-01/SS01	0-0.5		mg/kg	10 U	11	10 U	3	81	72	815	696
SP-1000/SS01	0-0.5		mg/kg	10 U	10 U	10 U	3	94	83	851	702
SP-02/SS01	0-0.5		mg/kg	34 J*	--	14	--	633	--	1,860	--
SP-03/SS01	0-0.5		mg/kg	10 U J*	--	10 U	--	120	--	983	--
SP-04/SS01	0-0.5		mg/kg	10 U J*	--	10 U	--	20 U	--	460	--
SP-05/SS01	0-0.5		mg/kg	20	12	25	23	357	284	2,500	1,840
SP-06/SS01	0-0.5		mg/kg	10 U	--	17	--	41	--	1,360	--
SP-07/SS01	0-0.5		mg/kg	58	--	15	--	894	--	1,870	--
SP-08/SS01	0-0.5		mg/kg	10 U	--	25	--	187	--	2,450	--
SP-09/SS01	0-0.5	Dup of SP-11/SS01	mg/kg	43	--	25	--	631	--	3,570	--
SP-10/SS01	0-0.5		mg/kg	55	--	38	--	828	--	3,770	--
SP-11/SS01	0-0.5		mg/kg	43	--	23	--	697	--	2,500	--
SP-1002/SS01	0-0.5		mg/kg	41	--	28	--	626	--	2,450	--
SP-12/SS01	0-0.5		mg/kg	10 U	--	12	--	42	--	1,230	--
SP-13/SS01	0-0.5		mg/kg	10 U	--	16	--	36	--	1,120	--
SP-14/SS01	0-0.5		mg/kg	14	--	13	--	246	--	1,570	--
SP-15/SS01	0-0.5		mg/kg	39 J*	--	42	--	638	--	3,730	--
SP-16/SS01	0-0.5		mg/kg	204	--	48	--	3,060	--	7,000 >E	5,860
SP-17/SS01	0-0.5		mg/kg	45	--	41	--	845	--	4,900	--
SP-18/SS01	0-0.5	Dup of SP-19/SS01	mg/kg	112	--	77	--	1,810	--	7,000 >E	8,130
SP-19/SS01	0-0.5		mg/kg	43	--	25	--	702	--	3,920	--
SP-1004/SS01	0-0.5		mg/kg	35	--	24	--	533	--	3,400	--
SP-20/SS01	0-0.5		mg/kg	10 U	--	14	--	48	--	864	--
SP-21/SS01	0-0.5		mg/kg	10 U	--	25	--	113	--	1,780	--
SP-22/SS01	0-0.5		mg/kg	10 U	10 U	15	12	94	81	1,550	1,210
SP-23/SS01	0-0.5		mg/kg	10 U	--	32	--	158	--	2,160	--
SP-24/SS01	0-0.5		mg/kg	49	--	13	--	708	--	1,370	--
SP-25/SS01	0-0.5		mg/kg	51	--	34	--	925	--	3,520	--

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs (continued)											
SP-26/SS01	0-0.5	Dup of SP-43/SS01	mg/kg	58	--	46	--	930	--	4,780	--
SP-28/SS01	0-0.5		mg/kg	25	--	17	--	438	--	2,160	--
SP-29/SS01	0-0.5		mg/kg	10 U	10 U	10 U	3	21	26	653	473
SP-30/SS01	0-0.5		mg/kg	410	--	346	--	5,500 >E	5,170	7,000 >E	35,600
SP-31/SS01	0-0.5		mg/kg	22	--	33	--	381	--	4,470	--
SP-32/SS01	0-0.5		mg/kg	57	--	130	--	992	--	7,000 >E	4,860
SP-33/SS01	0-0.5		mg/kg	13 J*	--	10 U	--	211	--	888	--
SP-34/SS01	0-0.5		mg/kg	10 U	--	19	--	24	--	2,140	--
SP-35/SS01	0-0.5		mg/kg	53	--	160	--	666	--	7,000 >E	10,300
SP-36/SS01	0-0.5		mg/kg	87	33	60	40	1,510	1,140	7,000 >E	8,920
SP-42/SS01	0-0.5		mg/kg	171	--	10 U	--	2,270	--	890	--
SP-43/SS01	0-0.5		mg/kg	152	--	153	--	2,180	--	7,000 >E	9,460
SP-1011/SS01	0-0.5		mg/kg	129	--	158	--	1,940	--	7,000 >E	6,520
SP-44/SS01	0-0.5		mg/kg	22 J*	--	63	--	401	--	2,470	--
SP-45/SS01	0-0.5		mg/kg	10 U	--	10 U	--	120	--	1,530	--
SP-46/SS01	0-0.5		mg/kg	64 J*	25	31	29	1,110	934	2,550	2,080
SP-47/SS01	0-0.5		mg/kg	416	--	1,000 >E	799	5,500 >E	3,650	7,000 >E	41,400
SP-50/SS01	0-0.5		mg/kg	14	--	91	--	264	--	1,590	--
SP-51/SS01	0-0.5		mg/kg	95	--	171	--	1,580	--	5,790	--
SP-52/SS01	0-0.5		mg/kg	22	--	12	--	372	--	1,020	--
SP-53/SS01	0-0.5	Dup of SP-53/SS01	mg/kg	32	10	78	54	596	446	1,812	1,360
SP-1014/SS01	0-0.5		mg/kg	44	16	89	65	789	568	2,290	1,810
SP-54/SS01	0-0.5		mg/kg	108	--	29.4	--	2,020	--	1,990	--
SP-56/SS01	0-0.5		mg/kg	35.3	--	34.6	--	735	--	3,130	--
SP-57/SS01	0-0.5		mg/kg	23.8	--	11.1	--	399	--	1,150	--
SP-58/SS01	0-0.5		mg/kg	10 U	--	10 U	--	20 U	--	753	--

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs (continued)											
SP-59/SS01	0-0.5		mg/kg	10 U	--	10 U	--	84.9	--	853	--
SP-60/SS01	0-0.5		mg/kg	10 U	11	10 U	5	115	102	997	717
0.5 - 2 ft bgs											
PZ-04/SS02	0.5-2	Dup of SP-06/SS02	mg/kg	10 U	--	10 U	--	20 U	--	216	--
SP-01/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	225	--
SP-03/SS02	0.5-2		mg/kg	10 U J*	--	10 U	--	20 U	--	226	--
SP-06/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	224	--
SP-1001/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	193	--
SP-09/SS02	0.5-2		mg/kg	10 U	--	10 U	--	143	--	846	--
SP-10/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	487	--
SP-11/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	738	--
SP-13/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	62	--
SP-16/SS02	0.5-2		mg/kg	10 U	--	10 U	--	114	--	364	--
SP-17/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	146	--
SP-18/SS02	0.5-2		mg/kg	21	--	29	--	395	--	3,340	--
SP-19/SS02	0.5-2		mg/kg	95	--	59	--	1,550	--	7,000 >E	8,280
SP-20/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	257	--
SP-21/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	61	--
SP-22/SS02	0.5-2	Dup of SP-22/SS02	mg/kg	10 U	--	10 U	--	20 U	--	377	--
SP-1005/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	238	--
SP-23/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	565	--
SP-24/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	126	--
SP-25/SS02	0.5-2		mg/kg	10 U	10 U	10 U	1 U	20 U	17	112	83
SP-1006/SS02	0.5-2	Dup of SP-25/SS02	mg/kg	10 U	10 U	10 U	1	20 U	11	318	239
SP-26/SS02	0.5-2		mg/kg	76 J*	--	55	--	1,250 J*	--	5,470	--
SP-28/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	245	--
SP-29/SS02	0.5-2		mg/kg	10 U	--	10 U	--	60	--	773	--
SP-1007/SS02	0.5-2	Dup of SP-29/SS02	mg/kg	102	--	56	--	1,690	--	6,600	--
SP-30/SS02	0.5-2		mg/kg	10 U	--	13	--	77	--	1,620	--

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0.5 - 2 ft bgs (continued)											
SP-31/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	475	--
SP-32/SS02	0.5-2		mg/kg	10 U	12	10 U	1 U	20 U	23	109	86
SP-33/SS02	0.5-2		mg/kg	10 U J*	--	10 U	--	20 U	--	57	--
SP-34/SS02	0.5-2		mg/kg	10 U	--	10 U	--	23	--	185	--
SP-35/SS02	0.5-2		mg/kg	10 U	--	10 U	--	61	--	476	--
SP-36/SS02	0.5-2		mg/kg	10 U	--	10 U	--	138	--	1,190	--
SP-1009/SS02	0.5-2		mg/kg	11	--	15	--	173	--	1,560	--
SP-42/SS02	0.5-2		mg/kg	10 U	--	10 U	--	65	--	568	--
SP-43/SS02	0.5-2		mg/kg	34	--	124	--	543	--	3,090	--
SP-44/SS02	0.5-2		mg/kg	10 U	--	46	--	20 U	--	2,040	--
SP-45/SS02	0.5-2	Dup of SP-46/SS02	mg/kg	10 U J*	--	10 U	--	20 U	--	86	--
SP-46/SS02	0.5-2		mg/kg	10 U J*	--	10 U	--	20 U	--	77	--
SP-1012/SS02	0.5-2		mg/kg	10 U J*	--	10 U	--	20 U	--	71	--
SP-47/SS02	0.5-2		mg/kg	10 U	--	16	--	53	--	543	--
SP-50/SS02	0.5-2		mg/kg	10 U	--	86	--	36	--	431	--
SP-51/SS02	0.5-2		mg/kg	10 U	--	40	--	20 U	--	890	--
SP-52/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	84	--
SP-53/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	513	--
SP-54/SS02	0.5-2		mg/kg	10 U	--	10 U	--	23.8	--	440	--
SP-56/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	751	--
SP-57/SS02	0.5-2		mg/kg	10 U	--	10 U	--	174	--	833	--
SP-58/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	81	--
SP-59/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	84	--
SP-60/SS02	0.5-2		mg/kg	10 U	--	10 U	--	20 U	--	126	--
SP-1016/SS02	0.5-2	Dup of SP-60/SS02	mg/kg	10 U	--	10 U	--	20 U	--	112	--

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
2 - 4 ft bgs											
PZ-04/SS03	2-4	Dup of SP-16/SS03	mg/kg	10 U	--	10 U	--	20 U	--	57	--
SP-01/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	132	--
SP-03/SS03	2-4		mg/kg	10 U J*	--	10 U	--	20 U	--	133	--
SP-06/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
SP-09/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	101	--
SP-10/SS03	2-4		mg/kg	10 U	10 U	10 U	1 U	20 U	12	66	49
SP-11/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
SP-13/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	61	--
SP-16/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	317	--
SP-1003/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	466	--
SP-17/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	84	--
SP-18/SS03	2-4		mg/kg	10 U	10	10 U	1 U	20 U	25	59	51
SP-19/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	83	--
SP-20/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
SP-21/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	75	--
SP-22/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	65	--
SP-23/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	96	--
SP-24/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	62	--
SP-25/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	64	--
SP-26/SS03	2-4		mg/kg	10 U	--	10 U	--	208	--	1,270	--
SP-28/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	54	--
SP-29/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
SP-30/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	70	--
SP-31/SS03	2-4		mg/kg	10 U	--	10 U	--	24	--	51	--
SP-32/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	64	--
SP-1008/SS03	2-4	Dup of SP-32/SS03	mg/kg	10 U	--	10 U	--	20 U	--	63	--
SP-33/SS03	2-4		mg/kg	10 U J*	--	10 U	--	20 U	--	41	--
SP-34/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	61	--
SP-35/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	246	--

Table 4-9
On-Site Non-Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
2 - 4 ft bgs (continued)											
SP-36/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	79	--
SP-42/SS03	2-4		mg/kg	10 U	12	10 U	1 U	20 U	19	78	73
SP-43/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	155	--
SP-44/SS03	2-4		mg/kg	10 U	--	26	--	20 U	--	1,220	--
SP-45/SS03	2-4		mg/kg	10 U J*	--	10 U	--	20 U	--	61	--
SP-46/SS03	2-4		mg/kg	10 U J*	--	10 U	--	20 U	--	51	--
SP-47/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	69	--
SP-50/SS03	2-4		mg/kg	10 U	--	67	--	20 U	--	265	--
SP-51/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	63	--
SP-52/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	64	--
SP-53/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	60	--
SP-56/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
SP-59/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	67	--
4 - 8 ft bgs											
PZ-04/SS04	4-8		mg/kg	10 U	18	10 U	1 U	20 U	40	84	72
8 - 10.5 ft bgs											
PZ-04/SS05	8-10.5		mg/kg	10 U	--	10 U	--	20 U	--	170	--

Notes:

Detections are presented in **bold**.
Screening values are presented on Table 4-1.
Description of data qualifiers is presented on Table 4-6.
bgs = below ground surface
Dup = Duplicate Sample
ft = feet
ICP = Inductively Coupled Plasma
ID = Identification

mg/kg = milligrams per kilogram
XRF = X-Ray Fluorescence Spectroscopy

Table 4-10
On-Site Non-Waste Area Soil Results for Toxicity Characteristic Leaching Procedure
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	(ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
0 - 0.5 ft bgs						
SP-01/SS01	0-0.5	Dup of SP-01/SS01	mg/L	0.05 U	0.027	0.05 U
SP-1000/SS01	0-0.5		mg/L	0.05 U	0.023	0.05 U
SP-05/SS01	0-0.5		mg/L	0.05 U	0.129	0.213
SP-22/SS01	0-0.5		mg/L	0.05 U	0.160	0.05 U
SP-29/SS01	0-0.5		mg/L	0.05 U	0.393	0.481
SP-36/SS01	0-0.5		mg/L	0.05 U	1.69	3.93
SP-46/SS01	0-0.5		mg/L	0.05 U	0.295	1.02
SP-53/SS01	0-0.5	Dup of SP-53/SS01	mg/L	0.05 U	0.809	0.298
SP-1014/SS01	0-0.5		mg/L	0.05 U	0.719	0.221
SP-60/SS01	0-0.5		mg/L	0.05 U	0.025	0.05 U
0.5 - 2 ft bgs						
SP-25/SS02	0.5-2	Dup of SP-25/SS02	mg/L	0.05 U	0.025	0.05 U
SP-1006/SS02	0.5-2		mg/L	0.05 U	0.013	0.05 U
SP-32/SS02	0.5-2		mg/L	0.05 U	0.011	0.05 U
SP-49/SS02	0.5-2		mg/L	0.05 U	0.044	0.05 U
2 - 4 ft bgs						
SP-10/SS03	2-4		mg/L	0.05 U	0.005 U	0.05 U
SP-18/SS03	2-4		mg/L	0.05 U	0.005 U	0.05 U
SP-42/SS03	2-4		mg/L	0.05 U	0.005 U	0.05 U
4 - 8 ft bgs						
PZ-04/SS04	4-8		mg/L	0.05 U	0.005 U	0.05 U

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ID = Identification

mg/L = milligrams per liter

TCLP = Toxicity Characteristic Leaching Procedure

Table 4-11
On-Site Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs - Waste Materials Observed											
PZ-07/SS01	0-0.5		mg/kg	650 >E	108	170	--	5,500 >E	7,820	7,000 >E	15,200
PZ-09/SS01	0-0.5		mg/kg	174	--	128	--	2,630	--	7,000 >E	14,300
SP-27/SS01	0-0.5		mg/kg	117	--	109	--	2,050	--	7,000 >E	11,600
SP-37/SS01	0-0.5		mg/kg	166	--	10 U	--	2,020	--	2,450	--
SP-38/SS01	0-0.5		mg/kg	276	--	64	--	3,950	--	7,000 >E	6,240
SP-39/SS01	0-0.5		mg/kg	199	--	51	--	3,230	--	7,000 >E	11,800
SP-40/SS01	0-0.5		mg/kg	406	--	243	--	6,140	--	7,000 >E	85,900
SP-41/SS01	0-0.5		mg/kg	309	--	155	--	4,720	--	7,000 >E	18,700
SP-48/SS01	0-0.5		mg/kg	316	--	342	--	4,740	--	7,000 >E	47,900
SP-49/SS01	0-0.5		mg/kg	39	--	16	--	705	--	2,030	--
SP-55/SS01	0-0.5	Dup of SP-55/SS01	mg/kg	230	96	81.3	61	3,610	3,240	7,000 >E	12,100
SP-1015/SS01	0-0.5		mg/kg	234	97	71.2	58	3,630	3,200	7,000 >E	12,200
TR-01/SS01	0-0.5		mg/kg	650 >E	548	651	--	5,500 >E	20,100	7,000 >E	145,000
TR-1000/SS01	0-0.5		mg/kg	650 >E	455	654	--	5,500 >E	18,100	7,000 >E	148,000
TR-02/SS01	0-0.5		mg/kg	650 >E	751	469	--	5,500 >E	20,700	7,000 >E	76,600
TR-03/SS01	0-0.5		mg/kg	650 >E	242	94	--	5,500 >E	13,600	7,000 >E	19,900
TR-04/SS01	0-0.5		mg/kg	650 >E	554	753	--	5,500 >E	71,700	7,000 >E	96,100
TR-05/SS01	0-0.5		mg/kg	650 >E	475	401	405	5,500 >E	13,300	7,000 >E	119,000
TR-06/SS01	0-0.5		mg/kg	545	--	198	--	5,500 >E	7,500	7,000 >E	36,800
TR-07/SS01	0-0.5		mg/kg	650 >E	492	202	--	5,500 >E	23,700	7,000 >E	84,700
TR-08/SS01	0-0.5	Dup of TR-14/SS01	mg/kg	650 >E	203	255	--	5,500 >E	10,300	7,000 >E	37,000
TR-09/SS01	0-0.5		mg/kg	650 >E	620	556	--	5,500 >E	17,000	7,000 >E J*	129,000
TR-10/SS01	0-0.5		mg/kg	650 >E	1,050	1,000 >E	1,620	5,500 >E	25,600	7,000 >E J*	165,000
TR-11/SS01	0-0.5		mg/kg	321	--	200	--	4,780	--	7,000 >E	25,800
TR-12/SS01	0-0.5		mg/kg	650 >E	219	287	--	5,500 >E	27,300	7,000 >E	51,400
TR-13/SS01	0-0.5		mg/kg	650 >E	525	1,000 >E	840	5,500 >E	28,700	7,000 >E J*	118,000
TR-14/SS01	0-0.5		mg/kg	372	--	156	--	5,500 >E	4,520	7,000 >E J*	25,100
TR-1003/SS01	0-0.5		mg/kg	650 >E	155	202	--	5,500 >E	5,660	7,000 >E J*	30,800
TR-15/SS01	0-0.5		mg/kg	354	--	54	--	4,720	--	7,000 >E J*	12,800
TR-16/SS01	0-0.5		mg/kg	650 >E	135	444	--	5,500 >E	4,770	7,000 >E	15,200
TR-17/SS01	0-0.5		mg/kg	650 >E	909	89	--	5,500 >E	27,000	7,000 >E	52,000
TR-18/SS01	0-0.5		mg/kg	650 >E	805	85	--	5,500 >E	61,600	7,000 >E	70,500

Table 4-11
On-Site Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0 - 0.5 ft bgs - Waste Materials Observed (continued)											
TR-19/SS01	0-0.5	See Ecological Eval.	mg/kg	650 >E	270	513	--	5,500 >E	25,100	7,000 >E	75,800
TR-20/SS01	0-0.5		mg/kg	650 >E	480	173	--	5,500 >E	38,600	7,000 >E	53,100
TR-21/SS01	0-0.5		mg/kg	650 >E	625	667	--	5,500 >E	28,800	7,000 >E	82,900
EC-02/SS02	--		mg/kg	--	1,170	--	77.2	--	38,000	--	38,200
TFM-BB-S-1	--		mg/kg	--	908	--	71	--	45,400	--	43,100
TFM-BB-W-1	--		mg/kg	--	968	--	29.3 J	--	24,400	--	82,000
TFM-BB-S-2	--		mg/kg	--	961	--	61	--	36,000	--	96,800
TFM-BB-W-2	--		mg/kg	--	735	--	60.2	--	21,500	--	22,800
0.5 up to 5 ft bgs - Waste Materials Observed											
PZ-07/SS02	0.5-2	Dup of PZ-07/SS02	mg/kg	78	--	54	--	1,320	--	2,180	--
PZ-1000/SS02	0.5-2		mg/kg	74	--	53	--	1,340	--	2,510	--
PZ-09/SS02	0.5-2	Dup of PZ-09/SS04	mg/kg	251	--	166	--	3,290	--	7,000 >E	10,800
PZ-09/SS04	4-8		mg/kg	30	--	97	--	387	--	5,720	--
PZ-1002/SS04	4-8		mg/kg	10 U	--	12	--	49	--	472	--
SP-27/SS02	0.5-2		mg/kg	441	--	290	--	5,500 >E	4,230	7,000 >E	30,900
SP-27/SS03	2-4		mg/kg	281	--	147	--	2,910	2,290	7,000 >E	21,600
SP-37/SS02	0.5-2		mg/kg	10 U	--	21	--	20 U	--	911	--
SP-38/SS02	0.5-2		mg/kg	13	--	10 U	--	181	--	951	--
SP-39/SS02	0.5-2		mg/kg	86	45	99	65	1,360	1,170	7,000 >E	11,400
SP-40/SS02	0.5-2		mg/kg	179 J*	--	97	--	2,700 J*	--	7,000 >E	4,270
SP-41/SS02	0.5-2		mg/kg	222	--	147	--	3,440	--	7,000 >E	13,700
SP-48/SS02	0.5-2		mg/kg	650 >E	703	322	--	5,500 >E	13,800	7,000 >E	33,000
SP-49/SS02	0.5-2		mg/kg	10 U	10 U	10 U	3	20 U	18	593	461
SP-55/SS02	0.5-2		mg/kg	95	--	39.9	--	1,630	--	4,860	--
TR-01/SS02	2.5-3	Dup of TR-09/SS02	mg/kg	650 >E	615	315	242	5,500 >E	16,800	7,000 >E	57,000
TR-03/SS02	2.5-3		mg/kg	328	--	114	--	5,280	--	7,000 >E	18,400
TR-05/SS02	2-2.5		mg/kg	504	--	340	--	5,500 >E	6,890	7,000 >E	37,500
TR-07/SS02	1.75-2.25'		mg/kg	334	--	46	--	5,290	--	7,440	--
TR-09/SS02	4.5-5		mg/kg	650 >E	502	636	691	5,500 >E	13,500	7,000 >E J*	84,400
TR-1002/SS02	4.5-5		mg/kg	650 >E	555	653	674	5,500 >E	14,900	7,000 >E J*	93,300
TR-11/SS02	1-1.5		mg/kg	186	--	99	--	2,980	--	7,000 >E J*	16,000

Table 4-11
On-Site Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
0.5 up to 5 ft bgs - Waste Materials Observed (continued)											
TR-13/SS02	3.25-3.75		mg/kg	510	--	199	--	5,000 >E	13,100	7,000 >E J*	39,300
TR-15/SS02	2.75-3.25		mg/kg	505	--	232	--	5,500 >E	7,550	7,000 >E J*	19,400
TR-17/SS02	0.5-1		mg/kg	650 >E	330	66	--	5,500 >E	15,000	7,000 >E	27,700
TR-19/SS02	3-3.5		mg/kg	650 >E	367	441	594	5,500 >E	25,200	7,000 >E	104,000
Native - No Waste Materials Observed											
PZ-07/SS03	2-4		mg/kg	10 U	18	10 U	1 U	20 U	15	402	343
SP-37/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	69	--
SP-38/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	74	--
SP-39/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	246	--
SP-1010/SS03	2-4	Dup of SP-39/SS03	mg/kg	10 U	--	10 U	--	20 U	--	383	--
SP-40/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	77	--
SP-41/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	107	--
SP-48/SS03	2-4		mg/kg	10 U	--	10 U	--	50	--	131	--
SP-49/SS03	2-4		mg/kg	10 U	--	10 U	--	20 U	--	63	--
SP-1013/SS03	2-4	Dup of SP-49/SS03	mg/kg	10 U	--	10 U	--	20 U	--	70	--
TR-01/SS03	5-5.5		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
TR-02/SS03	5-5.5		mg/kg	10 U	--	10 U	--	20 U	--	111	--
TR-03/SS03	5-5.5		mg/kg	10 U	--	10 U	--	20 U	--	94	--
TR-04/SS03	1.5-2		mg/kg	10 U	--	10 U	--	20 U	--	43	--
TR-05/SS03	3-3.5		mg/kg	10 U	--	10 U	--	20 U	--	94	--
TR-1001/SS03	3-3.5	Dup of TR-05/SS03	mg/kg	10 U	--	10 U	--	20 U	--	80	--
TR-06/SS03	1.75-2.25		mg/kg	10 U	--	76	--	20 U	--	4,380	--
TR-07/SS03	2.75-3.25		mg/kg	10 U	--	61	--	24	--	3,460	--
TR-08/SS03	4.75-5.25		mg/kg	10 U	--	10 U	--	23	--	127	--
TR-09/SS03	6.5-7		mg/kg	10 U	--	10 U	--	20 U	--	71 J*	--
TR-10/SS03	7-7.5		mg/kg	10 U	--	10 U	--	20 U	--	81 J*	--
TR-11/SS03	2-2.5		mg/kg	10 U	--	10 U	--	20 U	--	56 J*	--
TR-12/SS03	2.5-3		mg/kg	10 U	--	10 U	--	20 U	--	70	--
TR-13/SS03	5.5-6		mg/kg	10 U	10 U	10 U	1 U	20 U	20	85 J*	74
TR-14/SS03	3-3.5		mg/kg	10 U	--	10 U	--	20 U	--	97	--
TR-15/SS03	4.75-5.25		mg/kg	10 U	--	33	--	47	--	922 J*	--

Table 4-11
On-Site Waste Area Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
Native - No Waste Materials Observed (continued)											
TR-16/SS03	2.75-3.25	Dup of TR-18/SS03	mg/kg	10 U	--	10 U	--	20 U	--	81	--
TR-17/SS03	1-1.5		mg/kg	10 U	--	10 U	--	20 U	--	384	--
TR-18/SS03	2.5-3		mg/kg	10 U	--	10 U	--	20 U	--	71	--
TR-1004/SS03	2.5-3		mg/kg	10 U	--	10 U	--	20 U	--	66	--
TR-19/SS03	5-5.5		mg/kg	10 U	--	10 U	--	20 U	--	85	--
TR-20/SS03	3.75-4.25		mg/kg	10 U	--	10 U	--	20 U	--	79	--
TR-21/SS03	2.5-3		mg/kg	10 U	--	10 U	--	20 U	--	90	--
PZ-07/SS04	4-8		mg/kg	10 U	--	10 U	--	33	--	197	--
PZ-07/SS05	8-10.5		mg/kg	16	--	10 U	--	215	--	851	--

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

Eval. = Evaluation

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence Spectroscopy

Table 4-12
On-Site Waste Area Soil Results for Toxicity Characteristic Leaching Procedure
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
0 - 0.5 ft bgs - Waste Materials Observed						
TR-05/SS01	0-0.5		mg/L	0.05 U	6.03	48.7
SP-55/SS01	0-0.5		mg/L	0.05 U	0.559	3.39
SP-1015/SS01	0-0.5	Dup of SP-55/SS01	mg/L	0.054	0.577	3.32
0.5 up to 5 ft bgs - Waste Materials Observed						
SP-39/SS02	0.5-2		mg/L	0.058	1.64	18.5
TR-01/SS02	2.5-3		mg/L	0.05 U	2.87	72.6
TR-09/SS02	4.5-5		mg/L	0.05 U	3.63	4.87
TR-1002/SS02	4.5-5	Dup of TR-09/SS02	mg/L	0.05 U	3.95	4.98
TR-19/SS02	3-3.5		mg/L	0.05 U	3.48	47.2
Native - No Waste Materials Observed						
PZ-07/SS03	2-4		mg/L	0.05 U	0.012	0.05 U
TR-13/SS03	5.5-6		mg/L	0.05 U	0.005 U	0.05 U

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ID = Identification

mg/L = milligrams per liter

TCLP = Toxicity Characteristic Leaching Procedure

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6)											
TSL-09/SS01	0-0.25		mg/kg	10 U	--	10 U	--	54	--	260	--
TSL-09/SS02	0.25-1		mg/kg	10 U	--	10 U	--	26.9	--	173	--
(b) (6)											
OSL-96/SS01	0-0.25	Dup of OSL-96C/SS01	mg/kg	27	--	10 U	--	409	--	6,590	--
OSL-96A/SS02	0.25-1		mg/kg	23.3	--	10 U	--	261	--	864	--
OSL-96C/SS01	0-0.25		mg/kg	10 U	--	10 U	--	140	--	556	--
OSL-1011/SS01	0-0.25		mg/kg	13.1	--	10 U	--	145	--	548	--
OSL-96C/SS02	0.25-1		mg/kg	11	--	10 U	--	138	--	477	--
OSL-96D/SS01	0-0.25		mg/kg	42.6	23	10 U	2	503	425	966	746
OSL-96D/SS02	0.25-1		mg/kg	119	--	10 U	--	1,430	--	1,860	--
OSL-96E/SS01	0-0.25		mg/kg	10 U	--	10 U	--	37.5	--	194	--
OSL-96E/SS02	0.25-1		mg/kg	10 U	--	10 U	--	73	--	298	--
(b) (6)											
OSL-108/SS01	0-0.25	Dup of OSL-109/SS01	mg/kg	10 U	--	10 U	--	58.7	--	269	--
OSL-109/SS01	0-0.25		mg/kg	10.9	--	10 U	--	78.2	--	383	--
OSL-1014/SS01	0-0.25		mg/kg	10.4	--	10 U	--	74.2	--	358	--
(b) (6)											
OSL-61/SS01	0-0.25		mg/kg	10 U	--	10 U	--	65	--	233	--
(b) (6)											
OSL-114/SS01	0-0.25		mg/kg	10 U	--	10 U	--	37.1	--	288	--
(b) (6)											
OSL-14/SS01	0-0.25		mg/kg	10 U	--	10 U	--	45	--	198	--
(b) (6)											
OSL-104/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	93.2	--
(b) (6)											
OSL-111/SS01	0-0.25		mg/kg	10 U	--	10 U	--	46.7	--	209	--
(b) (6)											
OSL-107/SS01	0-0.25		mg/kg	10 U	--	10 U	--	48.5	--	253	--
(b) (6)											
OSL-106/SS01	0-0.25		mg/kg	10 U	--	10 U	--	86.7	--	435	--

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
OSL-105/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	98.1	--
OSL-113/SS01	0-0.25		mg/kg	10 U	10 U	10 U	1 U	20 U	13	69.8	46
OSL-54/SS01	0-0.25		mg/kg	10 U	--	10 U	--	23	--	148	--
OSL-55/SS01	0-0.25		mg/kg	10 U	--	10 U	--	29	--	188	--
OSL-21/SS01	0-0.25		mg/kg	10 U	--	10 U	--	131	--	405	--
Cherokee Nation/ITEC											
TRB-11/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	71	--
City Park											
OSL-04/SS01	0-0.25		mg/kg	10 U	--	10 U	--	32	--	207	--
TSL-04/SS01	0-0.25		mg/kg	12	13	10 U	3	177	145	692	517
TSL-1000/SS01	0-0.25	TSL-04/SS01	mg/kg	10 U	14	10 U	3	170	144	720	551
OSL-08/SS01	0-0.25		mg/kg	10 U	--	10 U	--	102	--	353	--
OSL-94/SS01	0-0.25		mg/kg	17	--	10 U	--	286	--	988	--
OSL-94DW/SS01-GRAB	0-0.25	Driveway Grab Sample	mg/kg	10 U	--	10 U	--	62	--	220	--
TRB-04/SS01	0-0.25		mg/kg	10 U	--	10 U	--	237	--	879	--
Faith Assembly Church											
OSL-34/SS01	0-0.25		mg/kg	10 U	--	10 U	--	82	--	670	--
OSL-35/SS01	0-0.25		mg/kg	15	--	10 U	--	205	--	1,150	--
TSL-05/SS01	0-0.25		mg/kg	33	--	14	--	424	--	1,210	--
TSL-05A/SS02	0.25-1		mg/kg	10 U	11	10 U	1 U	40.6	44	227	183
TSL-05B/SS01	0-0.25		mg/kg	28.1	--	10 U	--	346	--	1,310	--
TSL-05B/SS02	0.25-1		mg/kg	10 U	--	10 U	--	105	--	747	--
TSL-05C/SS01	0-0.25		mg/kg	10.5	--	10 U	--	119	--	422	--
TSL-05C/SS02	0.25-1		mg/kg	10 U	--	10 U	--	20 U	--	296	--
TSL-05D/SS01	0-0.25		mg/kg	56.8	--	23.7	--	691	--	2,210	--

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP	
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120	
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000	
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000	
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000	
Faith Assembly Church (continued)												
TSL-05D/SS02	0.25-1	Dup of TSL-05D/SS02	mg/kg	17.9	--	12.5	--	238	--	1,340	--	
TSL-1001/SS02	0.25-1		mg/kg	16.4	--	10 U	--	208	--	947	--	
TSL-05E/SS01	0-0.25		mg/kg	21.4	--	11.6	--	247	--	1,020	--	
TSL-05E/SS02	0.25-1		mg/kg	10 U	--	10 U	--	12.7	--	307	--	
OSL-99/SS01	0-0.25		mg/kg	10	--	10 U	--	133	--	742	--	
(b) (6)												
TRB-09/SS01	0-0.25	Driveway Grab Sample Waste observed	mg/kg	29	--	10 U	--	406	--	1,500	--	
TRB-09A/SS02	0.25-1		mg/kg	49.4	--	10 U	--	458	--	1,950	--	
TRB-09B/SS01	0-0.25		mg/kg	41.9	24	10 U	4	419	296	1,690	1,090	
TRB-09B/SS02	0.25-1		mg/kg	41.4	--	10 U	--	400	--	1,580	--	
TRB-09DW/SS01-GRAB	0-0.25		mg/kg	650 >E	538	41	--	5,500 >E	8,950	7,000 >E	25,300	
TRB-09E/SS01	0-0.25		mg/kg	23.1	--	10 U	--	237	--	1,050	--	
TRB-1002/SS01	0-0.25		Dup of TRB-09E/SS01	mg/kg	21	--	10 U	--	243	--	1,090	--
TRB-09E/SS02	0.25-1		mg/kg	48.2	--	10 U	--	472	--	1,890	--	
(b) (6)												
OSL-07/SS01	0-0.25		mg/kg	10 U	--	10 U	--	88	--	368	--	
OSL-68/SS01	0-0.25	Dup of TRB-10/SS01	mg/kg	17	--	10 U	--	280	--	199	--	
OSL-69/SS01	0-0.25		mg/kg	16	21	10 U	5	227	197	764	636	
TRB-10/SS01	0-0.25		mg/kg	46	24	17	15	771	580	2,180	1,640	
TRB-1000/SS01	0-0.25		mg/kg	53	27	20	14	837	672	2,400	1,660	
TRB-10A/SS02	0.25-1		mg/kg	10 U	10	10 U	1	34.3	31	534	395	
TRB-10B/SS01	0-0.25		mg/kg	10 U	--	10 U	--	88.1	--	615	--	
TRB-10B/SS02	0.25-1		mg/kg	10 U	--	10 U	--	47.5	--	316	--	
TRB-10C/SS01	0-0.25		mg/kg	16.1	--	10 U	--	108	--	613	--	
TRB-10C/SS02	0.25-1		mg/kg	15.7	--	10 U	--	114	--	197	--	
TRB-10D/SS01	0-0.25		mg/kg	32.9	--	11.4	--	388	--	1,570	--	
TRB-10D/SS02	0.25-1		mg/kg	43.4	--	16.2	--	480	--	2,630	--	

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6) (continued)											
TRB-10E/SS01	0-0.25	Dup of TRB-10E/SS02	mg/kg	31.9	--	10 U	--	331	--	1,090	--
TRB-10E/SS02	0.25-1		mg/kg	20.8	--	10 U	--	979	--	182	--
TRB-1003/SS02	0.25-1		mg/kg	11	--	10 U	--	107	--	698	--
High School											
OSL-01/SS01	0-0.25		mg/kg	10 U	9	10 U	1 U	34	32	127	94
OSL-02/SS01	0-0.25		mg/kg	10 U	--	10 U	--	27	--	199	--
(b) (6)											
OSL-19/SS01	0-0.25		mg/kg	14	--	10 U	--	191	--	513	--
(b) (6)											
OSL-53/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	106	--
OSL-64/SS01	0-0.25		mg/kg	10 U	--	10 U	--	50	--	218	--
OSL-65/SS01	0-0.25		mg/kg	10 U	--	10 U	--	31	--	184	--
OSL-66/SS01	0-0.25		mg/kg	10 U	--	10 U	--	41	--	182	--
OSL-67/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	129	--
OSL-78/SS01	0-0.25		mg/kg	10 U	--	10 U	--	49	--	153	--
(b) (6)											
TRB-08/SS01	0-0.25	Trace waste observed	mg/kg	39	--	10 U	--	546	--	2,020	--
TRB-08A/SS02	0.25-1		mg/kg	269	--	18.4	--	2,850	--	5,160	--
TRB-08B/SS01	0-0.25	Waste observed	mg/kg	12.6	11	10 U	2	159	118	652	440
TRB-1001/SS01	0-0.25	Dup of TRB-08B/SS01	mg/kg	14.9	12	10 U	3	182	138	760	538
TRB-08B/SS02	0.25-1		mg/kg	21	--	10 U	--	214	--	786	--
TRB-08C/SS01	0-0.25		mg/kg	49.9	--	10 U	--	607	--	1,960	--
TRB-08C/SS02	0.25-1		mg/kg	72.3	--	11.5	--	797	--	2,440	--
TRB-08E/SS01	0-0.25		mg/kg	14.2	--	10 U	--	201	--	947	--
TRB-08E/SS02	0.25-1		mg/kg	14.4	--	10 U	--	134	--	666	--
(b) (6)											
OSL-33/SS01	0-0.25		mg/kg	17	--	10	--	217	--	1,540	--
Middle School											
TSL-02/SS01	0-0.25		mg/kg	10 U	--	10 U	--	70	--	232	--

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6)											
OSL-48/SS01	0-0.25	Waste observed Dup of OSL-49A/SS02	mg/kg	10 U	--	10 U	--	20 U	--	118	--
OSL-49/SS01	0-0.25		mg/kg	37	--	12	--	571	--	1,550	--
OSL-49A/SS02	0.25-1		mg/kg	10 U	--	10 U	--	92.8	--	506	--
OSL-1010/SS02	0.25-1		mg/kg	10 U	--	10 U	--	130	--	577	--
OSL-49B/SS01	0-0.25		mg/kg	14.6	--	10 U	--	210	--	836	--
OSL-49B/SS02	0.25-1	Waste observed	mg/kg	10	--	10 U	--	134	--	543	--
OSL-49C/SS01	0-0.25		mg/kg	144	49	127	89	2,220	1,680	7,000 >E	8,090
OSL-49C/SS02	0.25-1		mg/kg	10 U	--	38.6	--	72.2	--	1,560	--
OSL-49D/SS01	0-0.25		mg/kg	32	--	10 U	--	503	--	1,360	--
OSL-49D/SS02	0.25-1		mg/kg	10 U	10 U	10 U	1 U	20 U	17	216	151
OSL-49DD/SS01	0-0.25	Waste observed	mg/kg	10 U	--	10 U	--	69.5	--	413	--
OSL-49E/SS01	0-0.25		mg/kg	16.7	--	10 U	--	290	--	1,060	--
OSL-49E/SS02	0.25-1		mg/kg	10 U	--	10 U	--	20 U	--	162	--
OSL-49EE/SS01	0-0.25		mg/kg	10 U	--	10 U	--	17.2	--	263	--
OSL-50/SS01	0-0.25		mg/kg	10 U	10 U	10 U	1 U	37	37	164	210
OSL-1000/SS01	0-0.25	Dup of OSL-50/SS01	mg/kg	10 U	10 U	10 U	1 U	36	41	175	134
EC-01/SS02	0-0.25	See Ecological Eval.	mg/kg	--	5.7	--	3.1	--	79.7	--	377
BM-BB-S	0-0.25	See Ecological Eval.	mg/kg	--	6.8	--	1.8	--	65.2	--	211
(b) (6)											
OSL-36/SS01	0-0.25	Driveway Grab Sample	mg/kg	25	--	10	--	514	--	1,340	--
OSL-36A/SS02	0.25-1		mg/kg	10 U	--	10 U	--	34.3	--	361	--
OSL-36B/SS01	0-0.25		mg/kg	11.7	--	10 U	--	183	--	826	--
OSL-36B/SS02	0.25-1		mg/kg	10 U	--	10 U	--	66.9	--	822	--
OSL-36C/SS01	0-0.25		mg/kg	30.1	12	10 U	7	373	286	1,090	811
OSL-36C/SS02	0.25-1	Dup of OSL-36E/SS01	mg/kg	10 U	--	10 U	--	64.4	--	564	--
OSL-36D/SS01	0-0.25		mg/kg	10 U	--	10 U	--	118	--	535	--
OSL-36D/SS02	0.25-1		mg/kg	14.5	--	10 U	--	156	--	657	--
OSL-36DW/SS01-GRAB	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	99	--
OSL-36E/SS01	0-0.25		mg/kg	53.2	--	20.8	--	734	--	2,410	--
OSL-1008/SS01	0-0.25	Dup of OSL-36E/SS01	mg/kg	56	--	19.9	--	670	--	56	--
OSL-36E/SS02	0.25-1		mg/kg	14.2	--	10 U	--	230	--	869	--

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6) e (continued)											
OSL-37/SS01	0-0.25	Dup of OSL-39/SS01	mg/kg	12	--	10 U	--	179	--	744	--
OSL-38/SS01	0-0.25		mg/kg	10 U	--	10 U	--	167	--	678	--
OSL-39/SS01	0-0.25		mg/kg	57	24	23	19	867	677	2,990	2,350
OSL-1001/SS01	0-0.25		mg/kg	71	31	28	23	1,120	873	3,370	2,660
OSL-39A/SS02	0.25-1		mg/kg	10 U	--	10 U	--	20.6	--	347	--
OSL-39B/SS01	0-0.25	Dup of OSL-39C/SS01	mg/kg	27.8	--	12.6	--	329	--	1,270	--
OSL-39B/SS02	0.25-1		mg/kg	36.3	--	10 U	--	460	--	36.3	--
OSL-39C/SS01	0-0.25		mg/kg	23.3	--	13.9	--	257	--	1,230	--
OSL-1007/SS01	0-0.25		mg/kg	21.5	--	10 U	--	255	--	1,160	--
OSL-39C/SS02	0.25-1		mg/kg	10 U	--	10 U	--	20 U	--	492	--
OSL-39D/SS01	0-0.25		mg/kg	88.4	--	31.3	--	1,060	--	3,580	--
OSL-39D/SS02	0.25-1		mg/kg	10 U	--	10 U	--	36.5	--	421	--
OSL-39E/SS01	0-0.25		mg/kg	75.6	23	28.3	19	927	700	3,180	2,360
OSL-39E/SS02	0.25-1	mg/kg	10 U	--	10 U	--	22.9	--	413	--	
TRB-01/SS01	0-0.25	mg/kg	10 U	--	10 U	--	113	--	490	--	
(b) (6)											
OSL-59/SS01	0-0.25		mg/kg	20	--	10 U	--	112	--	218	--
Pioneer Park											
TSL-03/SS01	0-0.25		mg/kg	21	--	10 U	--	303	--	1,160	--
(b) (6)											
OSL-29/SS01	0-0.25		mg/kg	10 U	--	10 U	--	82	--	348	--
Right-of-Way / Ditches of Old US 169 and Atchinson Topeka Santa Fe Railroad											
OSL-100/SS01	0-0.25		mg/kg	227	66	193	147	3,960	2,960	7,000 >E	15,000
OSL-100/SS02	0.25-1		mg/kg	284	121	166	134	4,710	3,980	7,000 >E	15,800
OSL-101/SS01	0-0.25		mg/kg	650 >E	395	110	100	5,500 >E	15,900	7,000 >E	42,500
OSL-101/SS02	0.25-1		mg/kg	285	114	42.9	32	4,720	3,490	7,000 >E	14,700
OSL-102/SS01	0-0.25		mg/kg	36.3	--	11.8 J*	--	569	--	815	--
OSL-102/SS02	0.25-1	Dup of OSL-103/SS02	mg/kg	21.9	--	10 U J*	--	333	--	545	--
OSL-103/SS01	0-0.25		mg/kg	12.7	--	12.4 J*	--	261	--	973	--
OSL-103/SS02	0.25-1		mg/kg	10 U	10 U	10	12	107	112	786	835 J-
OSL-1013/SS02	0.25-1		mg/kg	10 U	10 U	10 U	3	58.3	62	382	327

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
Right-of-Way / Ditches of Old US 169 and Atchinson Topeka Santa Fe Railroad (continued)											
OSL-116/SS01	0-0.25	Waste observed	mg/kg	228	--	10.7	--	2,580	--	6,460	--
Rural Fire Department											
OSL-27/SS01	0-0.25		mg/kg	27	--	10 U	--	352	--	2,000	--
(b) (6)											
OSL-06/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	50 U	--
(b) (6)											
OSL-97A/SS01	0-0.25		mg/kg	13	--	10 U	--	199	--	474	--
OSL-97D/SS02	0.25-1		mg/kg	10 U	--	10 U	--	76	--	562	--
(b) (6)											
OSL-97B/SS01	0-0.25	Dup of OSL-97F/SS02	mg/kg	25	--	10 U	--	383	--	656	--
OSL-97C/SS02	0.25-1		mg/kg	10 U	10 U	10 U	1 U	35	52	201	149
OSL-97E/SS01	0-0.25		mg/kg	65.1	--	16.4	--	755	--	5,400	--
OSL-97E/SS02	0.25-1		mg/kg	13.7	--	10 U	--	197	--	902	--
OSL-97F/SS02	0.25-1		mg/kg	27.6	--	10 U	--	359	--	748	--
OSL-1012/SS02	0.25-1		mg/kg	49.7	--	10 U	--	636	--	861	--
OSL-97G/SS01	0-0.25		mg/kg	14.2	--	10 U	--	153	--	535	--
OSL-97G/SS02	0.25-1		mg/kg	10 U	--	10 U	--	57.3	--	256	--
(b) (6)											
OSL-31/SS01	0-0.25		mg/kg	21	--	10	--	310	--	1,330	--
(b) (6)											
OSL-17/SS01	0-0.25	Dup of OSL-17/SS01	mg/kg	10 U	11	10 U	2	91	79	432	346
OSL-1002/SS01	0-0.25		mg/kg	10 U	12	10 U	2	91	82	465	350
(b) (6)											
OSL-12/SS01	0-0.25		mg/kg	47	40	10 U	4	616	512	1,110	835
OSL-12A/SS02	0.25-1		mg/kg	10 U	--	10 U	--	63	--	655	--
OSL-12B/SS01	0-0.25		mg/kg	10 U	--	10 U	--	25.6	--	209	--
OSL-12B/SS02	0.25-1		mg/kg	10 U	--	10 U	--	20 U	--	92.4	--
OSL-12C/SS01	0-0.25		mg/kg	20.2	--	10 U	--	210	--	669	--
OSL-12C/SS02	0.25-1		mg/kg	10 U	--	10 U	--	58.4	--	480	--
OSL-12D/SS01	0-0.25		mg/kg	19.7	--	10 U	--	201	--	643	--
OSL-12D/SS02	0.25-1		mg/kg	10.5	--	10 U	--	108	--	597	--

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP	
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120	
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000	
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000	
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000	
(b) (6) (continued)												
OSL-12E/SS01	0-0.25	Dup of OSL-12E/SS01	mg/kg	13.6	--	10 U	--	122	--	557	--	
OSL-1006/SS01	0-0.25		mg/kg	13.2	--	10 U	--	102	--	430	--	
OSL-12E/SS02	0.25-1		mg/kg	10 U	10 U	10 U	1	102	77	430	292	
OSL-40/SS01	0-0.25	Dup of OSL-40B/SS02	mg/kg	54	--	11	--	794	--	2,640	--	
OSL-40A/SS02	0.25-1		mg/kg	10 U	--	10 U J*	--	94.6	--	714	--	
OSL-40B/SS01	0-0.25		mg/kg	23.8	--	10 U J*	--	342	--	1,050	--	
OSL-40B/SS02	0.25-1		mg/kg	10 U	--	10 U J*	--	29.6	--	193	--	
OSL-1009/SS02	0.25-1		mg/kg	10 U	--	10 U	--	87.1	--	295	--	
OSL-40C/SS01	0-0.25		Waste observed	mg/kg	86.5	--	12.8	--	1,340	--	2,620	--
OSL-40C/SS02	0.25-1		mg/kg	10 U	--	10 U	--	104	--	1,040	--	
OSL-40CC/SS01	0-0.25		Waste observed	mg/kg	34.2	--	12.9	--	361	--	1,380	--
OSL-40CCC/SS01	0-0.25		Waste observed	mg/kg	64.5	--	16.8	--	640	--	3,240	--
OSL-40D/SS01	0-0.25		Waste observed	mg/kg	136	74	36.4	26	1,980	1,520	6,550	4,810
OSL-40D/SS02	0.25-1	Dup of OSL-41/SS01	mg/kg	10 U	--	10 U	--	108	--	1,230	--	
OSL-40DD/SS01	0-0.25		mg/kg	107	--	21.4	--	1,340	--	2,930	--	
OSL-40E/SS01	0-0.25		mg/kg	10.2	--	10 U	--	198	--	858	--	
OSL-40E/SS02	0.25-1		mg/kg	27.8	--	10 U	--	363	--	1,250	--	
OSL-41/SS01	0-0.25		mg/kg	31	--	10 U	--	300	--	1,540	--	
OSL-1003/SS01	0-0.25		mg/kg	27	--	10 U	--	297	--	1,830	--	
OSL-46/SS01	0-0.25		mg/kg	21	--	10 U	--	342	--	915	--	
OSL-47/SS01	0-0.25		mg/kg	16	--	10 U	--	188	--	739	--	
OSL-57/SS01	0-0.25		mg/kg	18	--	10 U	--	116	--	293	--	
OSL-58/SS01	0-0.25		mg/kg	15	--	10 U	--	106	--	201	--	
TSL-06/SS01	0-0.25	mg/kg	14	--	10 U	--	214	--	764	--		
TSL-07/SS01	0-0.25	mg/kg	12	--	10 U	--	185	--	431	--		
OSL-56/SS01	0-0.25		mg/kg	10 U	--	10 U	--	26	--	134	--	
OSL-63/SS01	0-0.25		mg/kg	10 U	--	10 U	--	74	--	287	--	
(b) (6)												
OSL-98/SS01	0-0.25		mg/kg	10 U	--	10 U	--	33	--	126	--	

Table 4-13
Off-Site Soil Results for Arsenic, Cadmium, Lead, and Zinc

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				31	31	0.4	0.4	15	15	120	120
USEPA Region VI Industrial Indoor Worker				3.8	3.8	1,000	1,000	800	800	100,000	100,000
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6)											
OSL-95/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	77	--
(b) (6)											
OSL-73/SS01	0-0.25		mg/kg	12	--	10 U	--	100	--	356	--
OSL-1005/SS01	0-0.25	Dup of OSL-73/SS01	mg/kg	17	--	10 U	--	128	--	429	--
Water Tower											
OSL-03/SS01	0-0.25		mg/kg	10 U	--	10 U	--	110	--	239	--
Wilson Elementary School											
TSL-01/SS01	0-0.25		mg/kg	10 U	--	10 U	--	20 U	--	142	--
(b) (6)											
OSL-25/SS01	0-0.25		mg/kg	10 U	--	10 U	--	145	--	504	--
OSL-1004/SS01	0-0.25	Dup of OSL-25/SS01	mg/kg	11	--	10 U	--	137	--	492	--

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence Spectroscopy

Table 4-14
Off-Site Soil Results for Toxicity Characteristic Leaching Procedure
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
(b) (6)						
OSL-96D/SS01	0-0.25		mg/L	0.05 U	0.015	0.094
(b) (6)						
OSL-113/SS01	0-0.25		mg/L	0.05 U	0.005 U	0.05 U
City Park						
TSL-04/SS01	0-0.25		mg/L	0.05 U	0.016	0.188
TSL-1000/SS01	0-0.25	Dup of TSL-04/SS01	mg/L	0.05 U	0.013	0.05 U
Faith Assembly Church						
TSL-05A/SS02	0.25-1		mg/L	0.05 U	0.005 U	0.05 U
(b) (6)						
TRB-09B/SS01	0-0.25		mg/L	0.05 U	0.02	0.063
(b) (6)						
OSL-69/SS01	0-0.25		mg/L	0.05 U	0.017	0.05 U
TRB-10/SS01	0-0.25		mg/L	0.05 U	0.06	0.086
TRB-1000/SS01	0-0.25	Dup of TRB-10/SS01	mg/L	0.05 U	0.067	0.105
TRB-10A/SS02	0.25-1		mg/L	0.05 U	0.015	0.05 U
High School						
OSL-01/SS01	0-0.25		mg/L	0.05 U	0.005 U	0.05 U
(b) (6)						
TRB-08B/SS01	0-0.25		mg/L	0.05 U	0.015	0.05 U
TRB-1001/SS01	0-0.25	Dup of TRB-08B/SS01	mg/L	0.05 U	0.008	0.05 U
(b) (6)						
OSL-49D/SS02	0.25-1		mg/L	0.05 U	0.005 U	0.05 U
OSL-50/SS01	0-0.25		mg/L	0.05 U	0.005 U	0.05 U
OSL-1000/SS01	0-0.25	Dup of OSL-50/SS01	mg/L	0.05 U	0.005 U	0.05 U
(b) (6)						
OSL-36C/SS01	0-0.25		mg/L	0.05 U	0.071	0.115
OSL-39/SS01	0-0.25		mg/L	0.05 U	0.192	0.239
OSL-1001/SS01	0-0.25	Dup of OSL-39/SS01	mg/L	0.05 U	0.192	0.240
OSL-39E/SS01	0-0.25		mg/L	0.05 U	0.191	0.268
Right-of-Way / Ditches of Old US 169 and Atchinson Topeka Santa Fe Railroad						
OSL-103/SS02	0.25-1		mg/L	0.05 U	0.088	0.05 U
OSL-1013/SS02	0.25-1	Dup of OSL-103/SS02	mg/L	0.05 U	0.020	0.05 U
(b) (6)						
OSL-97C/SS02	0.25-1		mg/L	0.05 U	0.009	0.05 U
(b) (6)						
OSL-17/SS01	0-0.25		mg/L	0.05 U	0.007	0.05 U
OSL-1002/SS01	0-0.25	Dup of OSL-17/SS01	mg/L	0.05 U	0.005 U	0.05 U
(b) (6)						
OSL-12/SS01	0-0.25		mg/L	0.05 U	0.032	0.127
OSL-12E/SS02	0.25-1		mg/L	0.05 U	0.012	0.05 U
(b) (6)						
OSL-40D/SS01	0-0.25		mg/L	0.05 U	0.359	1.3

Notes:

Detections are presented in **bold**. Screening values are presented on Table 4-1.
Description of data qualifiers is presented on Table 4-6.
bgs = below ground surface ID = Identification
Dup = Duplicate Sample mg/L = milligrams per liter
ft = feet TCLP = Toxicity Characteristic Leaching Procedure

Table 4-15
Background Surface Water Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	BG-OFF-01/SW01	BG-OFF-1000/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	9/29/2005	9/29/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:		Dup BG-OFF-01/SW01
Inorganic Constituents						UNITS		
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U
Cadmium, Total	0.25	42.4	1.33	14.49	84.13	ug/L	5 U	5 U
Lead, Total	2.5	105	4.10	5.0	25.0	ug/L	10 U	10 U
Zinc, Total	58.1	139	125	NAv	NAv	ug/L	5 U	5 U
Water Quality Parameters						UNITS		
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	400	NM
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	8.3	NM
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	122	122
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	23.1	22.9
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	15.9	19.5
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	47.6	51.1
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	14.4	14.4

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	BG-OFF-02/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	9/13/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:	City Lake
Inorganic Constituents						UNITS	
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U
Cadmium, Total	0.25	33.5	1.13	14.49	84.13	ug/L	5 U
Lead, Total	2.5	81.2	3.17	5.0	25.0	ug/L	10 U
Zinc, Total	58.1	117	106	NAv	NAv	ug/L	5 U
Water Quality Parameters						UNITS	
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	NM
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	NM
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	99.6
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	17.7
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	23.4
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	5.96

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

Table 4-16
Surface Water Sample Results for Adjacent Farm Pond

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Analyte	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	FP-01/SW01 9/20/2006	FP-02/SW01 9/20/2006	FP-1000/SW01 9/20/2006 Dup FP-02/SW01	FP-03/SW01 9/20/2006
		Fish & Wildlife Propagation		Human Health						
		Acute	Chronic	Water & Fish Consumption	Fish Consumption					
Inorganic Constituents						Units				
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U	10 U
Cadmium, Total	0.25	9.38	0.47	14.49	84.13	ug/L	5 U	5 U	5 U	5 U
Lead, Total	2.5	19.3	0.75	5.0	25.0	ug/L	10 U	10 U	10 U	10 U
Zinc, Total	58.1	44.8	40.6	NAv	NAv	ug/L	5 U	5 U	5 U	5 U
Water Quality Parameters										
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	300	300	300	300
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	8.5	8.8	8.8	8.9
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	110	109	110	109
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	25.2	25.2	25.1	25.2
Nitrogen, Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	0.1 U	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	14.4	15.1	15.8	15.5
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	41.3	44.8	43.8	43.3
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	13.4	13.9	13.8	13.8

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-17
Background Sediment Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
Pond at (b) (6)											
BG-OFF-01/SD01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U J-	--	50	--
BG-OFF-1000/SD01	0 - 0.5	Dup of BG-OFF-01/SD01	mg/kg	10 U	--	10 U	--	20 U J-	--	52	--
City Lake											
BG-OFF-02/SD01	0 - 0.5		mg/kg	10 U	--	10 U	--	20 U J-	--	180	--

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-3.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

Rep = Replicate Sample

XRF = X-Ray Fluorescence Spectroscopy

Table 4-18
Adjacent Farm Pond Sediment Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
FP-01/SD01	0 - 0.5	Dup of FP-02/SD01	mg/kg	10 U	--	10 U	--	64.5	--	393	--
FP-02/SD01	0 - 0.5		mg/kg	10 U	10 U	10 U	2	89.4	87	525	423
FP-1000/SD01	0 - 0.5		mg/kg	10 U	10 U	10 U	2	80.9	80	481	411
FP-03/SD01	0 - 0.5		mg/kg	10	--	10 U	--	142	--	608	--

Sample ID	Depth	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
Adjacent Farm Pond						
FP-02/SD01	0 - 0.5	Dup of FP-02/SD01	mg/L	0.05 U	0.005 U	0.066
FP-1000/SD01	0 - 0.5		mg/L	0.061	0.007	0.172

Notes:

Detections are presented in **bold**.
Screening values are presented on Table 4-3.
Description of data qualifiers is presented on Table 4-6.
bgs = below ground surface
Dup = Duplicate Sample
ft = feet
ICP = Inductively Coupled Plasma
ID = Identification
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
Rep = Replicate Sample
TCLP = Toxicity Characteristic Leaching Procedure
XRF = X-Ray Fluorescence Spectroscopy

Table 4-19
Surface Water Sample Results for TFM Pond 1
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	PD1-01/SW01 7/20/2005	PD1-02/SW01 7/20/2005	PD1-02/SW01R1 7/20/2005 Lab Replicate	PD1-02/SW01R2 7/20/2005 Lab Replicate	PD1-02A/SW01 9/13/2005 Resample	PD1-02/SW02 5/10/2006 Resample	PD1-1000/SW02 5/10/2006 Dup PD1-02/SW02 Resample	PD1-03/SW01 7/20/2005
		Fish & Wildlife Propagation		Human Health										
		Acute	Chronic	Water & Fish Consumption	Fish Consumption									
Inorganic Constituents						UNITS								
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cadmium, Total	0.25	40.4	1.29	14.49	84.13	ug/L	5 U	5 U	5 U	5 U	37	32	33	5 U
Lead, Total	2.5	100	3.91	5.0	25.0	ug/L	10 U	10 U	10 U	10 U	56	18	18	10 U
Zinc, Total	58.1	134	122	NAv	NAv	ug/L	64 U*	33 U*	33 U*	51 U*	1,250	1,630	1,680	63 U*
Water Quality Parameters						UNITS								
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	300	300	NM	NM	NM	320	320	300
pH	NAv	6.5 - 9.0	6.5 - 9.0	NAv	NAv	Std Unit	7.6	7.7	NM	NM	NM	7.6	7.6	7.9
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	123	134	131	135	147	68.6	69.7	132
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	16.4	16.4	16.4	16.5	22.3	10 U	10 U	16.1
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U	0.05 U	0.65	0.05 U	0.05 U	0.1 U	0.1 U	0.16
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	11	10 U	10 U	10 U	22.7	57.1	56.7	10 U
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	159	53	54.5	53.5	61.4	33	32.5	73.8
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	17.8	14.7	14.7	14.5	42.3	9.66	9.56	15.4

Notes:
Dectections are presented in **bold**.
Screening values are presented on Table 4-2.
Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter
NA - Not analyzed
NAv - Not available
NM - Not measured
Std Unit - Standard Unit
ug/L - micrograms per liter
umhos/cm - micromhos per centimeter
USEPA - United States Environmental Protection Agency

Table 4-20
On-Site Sediment Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
TFM Pond 1											
PD1-01/SD01	0 - 0.5	Rep of PD1-02/SD01 Rep of PD1-02/SD01	mg/kg	26	--	151	--	445	--	6,220	--
PD1-02/SD01	0 - 0.5		mg/kg	168	63	1,000 >E	1,400	2,270	1,020	7,000 >E	44,700
PD1-02/SD01Rep1	0 - 0.5		mg/kg	187	--	1,000 >E	--	2,400	--	7,000 >E	--
PD1-02/SD01Rep2	0 - 0.5		mg/kg	195	--	1,000 >E	--	2,740	--	7,000 >E	--
PD1-03/SD01	0 - 0.5		mg/kg	96	--	362	--	1,540	--	7,000 >E	6,940
TFM Pond 2											
PD2-01/SD01	0 - 0.5		mg/kg	52	--	44	--	942	--	4,840	--
PD2-02/SD01	0 - 0.5		mg/kg	84	--	330	--	1,200	--	7,000 >E	9,590
TFM Pond 3											
PD3-01/SD01	0 - 0.5	Dup of PD3-01/SD01	mg/kg	20	--	43	--	375	--	2,860	--
PD3-1000/SD01	0 - 0.5		mg/kg	23	--	59	--	393	--	2,770	--
PD3-02/SD01	0 - 0.5		mg/kg	68	--	220	--	1,060	--	7,000 >E	9,700
TFM Pond 4											
PD4-01/SD01	0 - 0.5		mg/kg	57	--	121	--	975	--	7,000 >E	7,140
TFM Pond 5											
PD5-01/SD01	0 - 0.5		mg/kg	10 U	--	10 U	--	239	--	808	--
Mid-Site Ravine											
MSR-01/SD01	0 - 0.5		mg/kg	195	--	265	--	2,940	--	7,000 >E	24,400
MSR-02/SD01	0 - 0.5		mg/kg	217	--	702	--	3,410	--	7,000 >E	20,700
MSR-03/SD01	0 - 0.5		mg/kg	588	--	255	--	5,500 >E	8,150	7,000 >E	34,700

Sample ID	(ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
TFM Pond 1						
PD1-02/SD01	0 - 0.5	Rep of PD1-02/SD01	mg/L	0.071	0.016	0.116
PD1-02/SD01Rep1	0 - 0.5		mg/L	0.066	0.036	0.282
PD1-02/SD01Rep2	0 - 0.5		mg/L	0.094	0.014	0.131

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-3.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Rep = Replicate Sample

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

Table 4-21
Surface Water Sample Results for TFM Pond 2
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	PD2-01/SW01	PD2-02/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	7/20/2005	7/20/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:		
Inorganic Constituents						UNITS		
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	17
Cadmium, Total	0.25	84.1	2.14	14.49	84.13	ug/L	22	12
Lead, Total	2.5	229	8.9	5.0	25.0	ug/L	17	75
Zinc, Total	58.1	233	211	NAv	NAv	ug/L	299	781
Water Quality Parameters						UNITS		
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	600	600
pH	NAv	6.5 - 9.0	6.5 - 9.0	NAv	NAv	Std Unit	7.6	7.6
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	240	210
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	28.9	37.7
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.07	0.5
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	10	20.3
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	351	107
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	46.9	25.5

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-22
Surface Water Sample Results for TFM Pond 3
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	PD3-01/SW01 7/20/2005	PD3-1000/SW01 7/20/2005 Dup PD3-01/SW01	PD3-02/SW01 7/20/2005
		Fish & Wildlife Propagation		Human Health					
		Acute	Chronic	Water & Fish Consumption	Fish Consumption				
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	60.1	1.70	14.49	84.13	ug/L	5 U	8	5 U
Lead, Total	2.5	157	6.1	5.0	25.0	ug/L	10 U	30	10 U
Zinc, Total	58.1	181	164	NAv	NAv	ug/L	67 U*	375	28 U*
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	800	NM	400
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.8	NM	7.8
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	178	177	147
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	24.2	24.3	22.8
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U	0.05 U	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	10 U	10 U
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	111	104	61.4
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	16.2	17.7	10.9

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-23
Surface Water Sample Results for TFM Pond 4
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	PD4-01/SW02 5/10/2006
		Fish & Wildlife Propagation		Human Health			
		Acute	Chronic	Water & Fish Consumption	Fish Consumption		
Inorganic Constituents						UNITS	
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U
Cadmium, Total	0.25	27.9	0.99	14.49	84.13	ug/L	16
Lead, Total	2.5	65.9	2.57	5.0	25.0	ug/L	10 U
Zinc, Total	58.1	101	91.9	NAv	NAv	ug/L	1,080
Water Quality Parameters						UNITS	
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	260
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.1
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	84.5
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	73.4
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	45.9
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	14.9

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-24
Surface Water Sample Results for TFM Pond 5
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	PD5-01/SW02
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/10/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:	
Inorganic Constituents						UNITS	
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U
Cadmium, Total	0.25	9.38	0.47	14.49	84.13	ug/L	5 U
Lead, Total	2.5	19.3	0.75	5.0	25.0	ug/L	10 U
Zinc, Total	58.1	44.8	40.6	NAv	NAv	ug/L	261
Water Quality Parameters						UNITS	
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	160
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	6.7
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	32.2
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	44
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	93.9 J-
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	29.5

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-25
Surface Water Sample Results for TFM Mid-Site Ravine and Cistern
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	MSR-01/SW02	MSR-02/SW02	MSR-1000/SW02	MSR-03/SW02
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/8/2006	5/8/2006	5/8/2006	5/8/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:			Dup MSR-02/SW02	
Inorganic Constituents						UNITS				
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U	10 U
Cadmium, Total	0.25	19.4	0.77	14.49	84.13	ug/L	82	72	73	184
Lead, Total	2.5	43.9	1.71	5.0	25.0	ug/L	10 U	10 U	10 U	20
Zinc, Total	58.1	77.4	70.1	NAv	NAv	ug/L	2,860	3,170	3,200	8,250
Water Quality Parameters						UNITS				
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	280	300	NM	480
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.3	7.0	NM	6.4
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	61.7	66.9	66.5	50.5
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	10 U	10 U	15.6
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	0.1 U	0.1 U	2.62
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	54.8	57.9	57.6	109
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	25.8 J-	24.8 J-	28.3 J-	13.9 J-
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	7.73	8.6	8.74	4.53

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-25
Surface Water Sample Results for TFM Mid-Site Ravine and Cistern
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	CST-01/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/10/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:	Cistern
Inorganic Constituents						UNITS	
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U
Cadmium, Total	0.25	92.1	2.29	14.49	84.13	ug/L	5 U
Lead, Total	2.5	254	9.90	5.0	25.0	ug/L	10 U
Zinc, Total	58.1	249	226	NAv	NAv	ug/L	260
Water Quality Parameters						UNITS	
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	600
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.4
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	244
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	16.4
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	75.4
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	47.2
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	13.1

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-26
Surface Water Sample Results for the Strip Mine Pit
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	SMP-01/SW01	SMP-02/SW01	SMP-03/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	7/19/2005	7/19/2005	7/19/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:			
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	56.8	1.63	14.49	84.13	ug/L	5 U	5 U	5 U
Lead, Total	2.5	147	5.7	5.0	25.0	ug/L	10 U	10 U	10 U
Zinc, Total	58.1	173	157	NAv	NAv	ug/L	5 U	5 U	5 U
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	1,700	1,700	1,700
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.7	7.8	7.7
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	160	159	158
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	23.8	23.5	23.7
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U	0.05 U	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	693	714	743
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	13.4	20.8	21.3
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	5.24	5.23	5.09

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-26
Surface Water Sample Results for the Strip Mine Pit
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	SMP-1000/SW01	SMP-04/SW01	SMP-05/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	7/19/2005	7/19/2005	7/19/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:	Dup SMP-03/SW01		
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	56.8	1.63	14.49	84.13	ug/L	5 U	5 U	5 U
Lead, Total	2.5	147	5.7	5.0	25.0	ug/L	10 U	10 U	10 U
Zinc, Total	58.1	173	157	NAv	NAv	ug/L	5 U	5 U*	5 U
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	NM	1,700	1,800
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	NM	7.7	7.7
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	158	160	159
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	23.5	23.6	23.7
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U	0.05 U	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	739	703	714
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	26.3	25.8	23.3
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	5.24	5.18	5.14

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-26
Surface Water Sample Results for the Strip Mine Pit
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	SMP-06/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	7/19/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:	
Inorganic Constituents						UNITS	
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U
Cadmium, Total	0.25	56.8	1.63	14.49	84.13	ug/L	5 U
Lead, Total	2.5	147	5.7	5.0	25.0	ug/L	10 U
Zinc, Total	58.1	173	157	NAv	NAv	ug/L	5 U
Water Quality Parameters						UNITS	
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	1,700
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.8
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	158
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	23.5
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.05 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	712
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	23.8
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	4.95

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-27
Strip Mine Pit Sediment Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
SMP-01/SD01	0 - 0.5	Dup of SMP-03/SD01	mg/kg	14	--	10	--	180	--	1,080	--
SMP-02/SD01	0 - 0.5		mg/kg	27	--	21	--	339	--	1,710	--
SMP-03/SD01	0 - 0.5		mg/kg	22	32	22	28	321	334	3,460	2,450
SMP-1000/SD01	0 - 0.5		mg/kg	22	27	22	27	318	321	2,480	2,400
SMP-04/SD01	0 - 0.5		mg/kg	28	--	49	--	412	--	3,140	--
SMP-05/SD01	0 - 0.5		mg/kg	31	--	47	--	425	--	3,500	--
SMP-06/SD01	0 - 0.5		mg/kg	20	--	26	--	256	--	2,180	--

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
Strip Mine Pit						
SMP-03/SD01	0 - 0.5	Dup of SMP-03/SD01	mg/L	0.074	0.005 U	0.05 U
SMP-1000/SD01	0 - 0.5		mg/L	0.078	0.005 U	0.05 U

Notes:

Detections are presented in **bold**.
Screening values are presented on Table 4-3.
Description of data qualifiers is presented on Table 4-6.
bgs = below ground surface
Dup = Duplicate Sample
ft = feet
ICP = Inductively Coupled Plasma
ID = Identification
mg/kg = milligrams per kilogram

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
Rep = Replicate Sample
TCLP = Toxicity Characteristic Leaching Procedure
XRF = X-Ray Fluorescence Spectroscopy

Table 4-28
Surface Water Sample Results for Ditches/Drainages of Old US Hwy 169 and Railroad
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-01/SW02	OFF-02/SW01	OFF-03/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/10/2006	7/20/2005	5/10/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:			
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	54.1	1.58	14.49	84.13	ug/L	5 U	5 U	5 U
Lead, Total	2.5	139	5.43	5.0	25.0	ug/L	10 U	26	10 U
Zinc, Total	58.1	167	151	NAv	NAv	ug/L	42	186	209
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	560	1,000	1,100
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.0	7.6	7.1
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	183	241	227
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	17.7	11.6
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	2.05	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	30.5	263	345
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	40.2	24.8	22.5
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	13.1	4.4	6.8

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-28
Surface Water Sample Results for Ditches/Drainages of Old US Hwy 169 and Railroad
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-04/SW01	OFF-04/SW01R1	OFF-04/SW01R2
		Fish & Wildlife Propagation		Human Health		Date Sampled:	7/20/2005	7/20/2005	7/20/2005
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:		Lab Replicated	Lab Replicated
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	54.1	1.58	14.49	84.13	ug/L	5 U	5 U	5 U
Lead, Total	2.5	139	5.43	5.0	25.0	ug/L	15	15	12
Zinc, Total	58.1	167	151	NAv	NAv	ug/L	290	359	238
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	1,000	NM	NM
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.6	NM	NM
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	246	237	244
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	17.7	17.8	17.8
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.85	3.27	0.48
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	252	254	260
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	50.5	60.5	50
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	5.73	5.78	5.16

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-28
Surface Water Sample Results for Ditches/Drainages of Old US Hwy 169 and Railroad
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-10/SW02	OFF-16/SW01	OFF-17/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/9/2006	5/9/2006	5/9/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:			
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	54.1	1.58	14.49	84.13	ug/L	20	20	5 U
Lead, Total	2.5	139	5.43	5.0	25.0	ug/L	11	12	10 U
Zinc, Total	58.1	167	151	NAv	NAv	ug/L	1,170	1,160	447
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	200	200	100
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.1	7.3	7.3
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	65.1	66.6	63.7
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	10 U	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	55.9	57.2	33
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	84 J-	31.3	54.6
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	10.4	10	15.7

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-28
Surface Water Sample Results for Ditches/Drainages of Old US Hwy 169 and Railroad
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-18/SW01	OFF-19/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/9/2006	5/9/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:		
Inorganic Constituents						UNITS		
Arsenic, Total	190	360	190	NAv	205.0	ug/L	11	10 U
Cadmium, Total	0.25	54.1	1.58	14.49	84.13	ug/L	5 U	5 U
Lead, Total	2.5	139	5.43	5.0	25.0	ug/L	10 U	10 U
Zinc, Total	58.1	167	151	NAv	NAv	ug/L	59	625
Water Quality Parameters						UNITS		
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	500	200
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.3	7.3
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	162	80.6
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	19.9	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	60.2	44.4
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	83	36.8
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	23.9	11.8

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-29
Ditches/Drainages of Old US Hwy 169 and Railroad Sediment Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
Sample Locations East of Railroad Tracks											
OFF-01/SD01	0 - 0.5	Rep of OFF-04/SD01 Rep of OFF-04/SD01	mg/kg	60	--	10 U	--	923	--	1,390	--
OFF-02/SD01	0 - 0.5		mg/kg	171	--	146	--	2,720	--	7,000 >E	7,150
OFF-03/SD01	0 - 0.5		mg/kg	19	--	55	--	259	--	6,330	--
OFF-04/SD01	0 - 0.5		mg/kg	277	--	975	--	3,940	--	7,000 >E	26,700
OFF-04/SD01Rep1	0 - 0.5		mg/kg	267	--	891	--	3,930	--	7,000 >E	--
OFF-04/SD01Rep2	0 - 0.5		mg/kg	238	--	700	--	3,670	--	7,000 >E	--
OFF-19/SD01	0 - 0.5		mg/kg	157	--	40	--	1,980	--	7,000 >E	6,310
Sample Locations West of Railroad Tracks											
OFF-10/SD01	0 - 0.5		mg/kg	161	95	156	145	2,220	1,690	7,000 >E	15,100
OFF-16/SD01	0 - 0.5		mg/kg	197	--	215	--	3,120	--	7,000 >E	10,100
OFF-17/SD01	0 - 0.5		mg/kg	15	--	10 U	--	220	--	872	--
OFF-18/SD01	0 - 0.5		mg/kg	20 U	--	10 U	--	119	--	699	--

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
Ditches/Drainages of Old US Hwy 169 and Railroad						
OFF-10/SD01	0 - 0.5		mg/L	0.05 U	1.53	0.499

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-3.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Rep = Replicate Sample

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

Table 4-30
Surface Water Sample Results for North Drainage (b) (6)

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK*

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-05/SW02	OFF-06/SW02	OFF-07/SW02
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/10/2006	5/10/2006	5/10/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:			
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	38.1	1.24	14.49	84.13	ug/L	80	99	82
Lead, Total	2.5	94	3.65	5.0	25.0	ug/L	14	13	15
Zinc, Total	58.1	128	116	NAv	NAv	ug/L	3,060	4,210	3,420
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	600	500	650
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.4	7.0	7.2
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	84.8	75.8	81.5
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10	10 U	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.11	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	205	166	187
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	27.7	28.7	23.9
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	8.23	10.4	9.16

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-30
Surface Water Sample Results for North Drainage (b) (6)

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK*

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID:	OFF-08/SW02	OFF-09/SW01	OFF-09/SW02	OFF-14/SW01
		Fish & Wildlife Propagation		Human Health		Date Sampled:	5/10/2006	7/21/2005	5/9/2006	5/9/2006
		Acute	Chronic	Water & Fish Consumption	Fish Consumption	Comments:		Turbid Sample	Resample	
Inorganic Constituents						UNITS				
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	149	10 U	10 U
Cadmium, Total	0.25	38.1	1.24	14.49	84.13	ug/L	79	810	51	30
Lead, Total	2.5	94	3.65	5.0	25.0	ug/L	12	2,560	10 U	10 U
Zinc, Total	58.1	128	116	NAv	NAv	ug/L	3,370	61,300	2,500	607
Water Quality Parameters						UNITS				
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	650	600	600	230
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.1	6.8	7.1	6.9
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	80.6	245	83.6	62.9
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	13.2 J-	10	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	5.81	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	183	19.7 J-	211	50.1
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	27.7	165	23.8	25.3
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	9.25	46.9 R	7.37	26.5

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-30
Surface Water Sample Results for North Drainage (b) (6)

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK*

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	OFF-1001/SW01 5/9/2006 Dup of OFF-14	OFF-15/SW01 5/9/2006	OFF-20/SW01 5/9/2006
		Fish & Wildlife Propagation		Human Health					
		Acute	Chronic	Water & Fish Consumption	Fish Consumption				
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	38.1	1.24	14.49	84.13	ug/L	28	198	9
Lead, Total	2.5	94	3.65	5.0	25.0	ug/L	10 U	10 U	10 U
Zinc, Total	58.1	128	116	NAv	NAv	ug/L	583	8,390	653
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	230	1,400	200
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	6.9	6.9	7.3
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	56.8	272	72
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10 U	11.5	10 U
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.33	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	41.9	555	47
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	83	27.8	49.2
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	26.3	10.1	15.3

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4.6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-31
Northern Drainage on (b) (6) Sediment Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
(b) (6)											
OFF-05/SD01	0 - 0.5	Dup of OFF-08/SD01	mg/kg	142	--	120	--	2,060	--	6,030	--
OFF-06/SD01	0 - 0.5		mg/kg	24	--	114	--	417	--	6,730	--
OFF-07/SD01	0 - 0.5		mg/kg	79	--	987	--	1,220	--	7,000 >E	15,600
OFF-08/SD01	0 - 0.5		mg/kg	59	--	166	--	769	--	6,230	--
OFF-1000/SD01	0 - 0.5		mg/kg	63	--	197	--	820	--	7,000 >E	6,490
OFF-09/SD01	0 - 0.5	Dup of OFF-14/SD01	mg/kg	39	--	167	--	593	--	6,650	--
OFF-14/SD01	0 - 0.5		mg/kg	214	--	362	--	3,710	--	7,000 >E	14,800
OFF-1001/SD01	0 - 0.5		mg/kg	307	--	615	--	5,080	--	7,000 >E	14,400
OFF-15/SD01	0 - 0.5		mg/kg	341	39	268	53	5,500 >E	1,820	7,000 >E	7,280
OFF-20/SD01	0 - 0.5		mg/kg	34	--	31	--	468	--	2,940	--

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations				5	1	5
(b) (6)						
OFF-15/SD01	0 - 0.5		mg/L	0.05 U	1.08	2.69

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-3.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Rep = Replicate Sample

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray Fluorescence Spectroscopy

Table 4-32
Surface Water Results for Southern Drainage on (b) (6)

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, OK*

Parameter	USEPA Region VI Ecological Screening Levels Freshwater Chronic	Oklahoma Water Quality Criteria				Sample ID: Date Sampled: Comments:	OFF-11/SW02 5/10/2006	OFF-12/SW02 5/10/2006	OFF-13/SW02 5/10/2006
		Fish & Wildlife Propagation		Human Health					
		Acute	Chronic	Water & Fish Consumption	Fish Consumption				
Inorganic Constituents						UNITS			
Arsenic, Total	190	360	190	NAv	205.0	ug/L	10 U	10 U	10 U
Cadmium, Total	0.25	31.6	1.08	14.49	84.13	ug/L	5 U	5 U	5 U
Lead, Total	2.5	76.0	2.96	5.0	25.0	ug/L	10 U	10 U	10 U
Zinc, Total	58.1	112	101	NAv	NAv	ug/L	5 U	51	849
Water Quality Parameters						UNITS			
Specific Conductance	NAv	NAv	NAv	NAv	NAv	umhos/cm	1,060	1,000	1,100
pH	NAv	6.5 -9.0	6.5 -9.0	NAv	NAv	Std Unit	7.8	6.8	6.6
Alkalinity, Total	NAv	NAv	NAv	NAv	NAv	mg/L	147	82.2	54.4
Chloride	NAv	NAv	NAv	NAv	NAv	mg/L	10	13.4	11.4
Nitrite/Nitrate as N	NAv	NAv	NAv	NAv	NAv	mg/L	0.1 U	0.1 U	0.1 U
Sulfate	NAv	NAv	NAv	NAv	NAv	mg/L	293	369	445
Chemical Oxygen Demand	NAv	NAv	NAv	NAv	NAv	mg/L	19.6	14.8	12
Total Organic Carbon	NAv	NAv	NAv	NAv	NAv	mg/L	7.49	4.78	4.48

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-2.

Description of data qualifiers is presented on Table 4-6.

Cadmium, lead, and zinc fish & wildlife propagation values are derived from hardness-based calculation (see Table 4-2) where the average result for total alkalinity was used as the hardness value.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-33
Southern Drainage on (b) (6) Sediment Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID	Depth (ft bgs)	Comments	Units	Arsenic, XRF	Arsenic, ICP	Cadmium, XRF	Cadmium, ICP	Lead, XRF	Lead, ICP	Zinc, XRF	Zinc, ICP
USEPA Region VI Ecological				5.9	5.9	0.596	0.596	35	35	123	123
USEPA Region VI Industrial Outdoor Worker				1.8	1.8	560	560	800	800	100,000	100,000
USEPA Region VI Residential Soil				0.39	0.39	39	39	400	400	23,000	23,000
OFF-11/SD01	0 - 0.5		mg/kg	16	--	10 U	--	140	--	520	--
OFF-12/SD01	0 - 0.5		mg/kg	16	--	12	--	141	--	2,120	--
OFF-13/SD01	0 - 0.5		mg/kg	16	--	10	--	182	--	3,590	--

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-3.

Description of data qualifiers is presented on Table 4-6.

bgs = below ground surface

Dup = Duplicate Sample

ft = feet

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

Rep = Replicate Sample

XRF = X-Ray Fluorescence Spectroscopy

Table 4-34
Groundwater Results for Temporary Piezometers
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled:	PZ-01/GW01 9/13/2005	PZ-02/GW01 9/13/2005	PZ-03/GW01 9/13/2005	PZ-04/GW01 9/13/2005	PZ-05/GW01 9/13/2005	PZ-06/GW01 9/13/2005	PZ-07/GW01 9/13/2005	PZ-08/GW01 9/13/2005	PZ-09/GW01 9/13/2005	PZ-1001/GW01 9/13/2005
	MCL	Human Health Tap Water	Comments:										Dup PZ-09/GW01
Inorganic Constituents			UNITS										
Arsenic, Total	10	0.045	ug/L	17	10 U	10 U	10 U	10 U	10 U	17	10 U	12	10 U
Cadmium, Total	5	18	ug/L	18	5 U	5 U	5 U	5 U	8	99	20	178	133
Lead, Total	15	15	ug/L	607	12	40	31	10 U	59	946	148	371	25
Zinc, Total	5,000	11,000	ug/L	1,940	86	213	183	78	928	3,880	1,030	8,920	6,520
Water Quality Parameters			UNITS										
Specific Conductance	NAv	NAv	umhos/cm	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
pH	6.5 - 8.5	NAv	Std Unit	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Alkalinity, Total	NAv	NAv	mg/L	NA	NA	NA	NA	NA	NA	367	NA	184	183
Chloride	250	NAv	mg/L	NA	NA	NA	NA	NA	NA	10 U	NA	10.7	10.6
Nitrite/Nitrate as N	1	1	mg/L	NA	NA	NA	NA	NA	NA	0.18	NA	0.11	0.12
Sulfate	250	NAv	mg/L	NA	NA	NA	NA	NA	NA	944	NA	367	363
Chemical Oxygen Demand	NAv	NAv	mg/L	NA	NA	NA	NA	NA	NA	93.1	NA	5 U	5 U
Total Organic Carbon	NAv	NAv	mg/L	NA	NA	3.5	3.04	NA	NA	4.34	5.33	1.23	1.2

Notes:
Detections are presented in **bold**.
Screening values are presented on Table 4-4.
Description of data qualifiers is presented on Table 4-6.
mg/L - milligrams per liter
NA - Not analyzed
NAv - Not available
NM - Not measured
Std Unit - Standard Unit
ug/L - micrograms per liter
umhos/cm - micromhos per centimeter
USEPA - United States Environmental Protection Agency

Table 4-35
Groundwater Sample Results for Monitoring Well MW-1

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	MW-01/GW01 9/29/2005 Sept. 2005 Upgradient Well	MW-01/GW02 5/11/2006 May 2006 Upgradient Well	MW-01 / GW03 9/19/2006 Sept. 2006 Upgradient Well
	MCL	Human Health Tap Water				
Inorganic Constituents, Unfiltered			UNITS			
Arsenic, Total	10	0.045	ug/L	10 U	NA	10 U
Cadmium, Total	5	18	ug/L	5 U	NA	5 U
Lead, Total	15	15	ug/L	10 U	NA	10 U
Zinc, Total	5,000	11,000	ug/L	68	NA	12
Inorganic Constituents, Filtered			UNITS			
Arsenic, Filtered	10	0.045	ug/L	NA	10 U	10 U
Cadmium, Filtered	5	18	ug/L	NA	5 U	5 U
Lead, Filtered	15	15	ug/L	NA	10 U	10 U
Zinc, Filtered	5,000	11,000	ug/L	NA	5 U	5
Water Quality Parameters			UNITS			
Specific Conductance	NAv	NAv	umhos/cm	800	800	800
pH	6.5 - 8.5	NAv	Std Unit	7.4	7.2	7.6
Turbidity	NAv	NAv	NTU	25.4	1.35	13.2
Alkalinity, Total	NAv	NAv	mg/L	280	NA	318
Chloride	250	NAv	mg/L	25	NA	21.5
Nitrite/Nitrate as N	1	1	mg/L	0.3	NA	0.45
Sulfate	250	NAv	mg/L	90.9	NA	81
Chemical Oxygen Demand	NAv	NAv	mg/L	15.2	NA	5 U
Total Organic Carbon	NAv	NAv	mg/L	2	NA	NA

Notes:

Detections are presented in **bold**.

Screening levels are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

NAv - Not available

mg/L - milligrams per liter

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-36
Groundwater Sample Results for Monitoring Well MW-2
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	MW-02/GW01 9/29/2005 Sept. 2005	MW-02/GW02 5/12/2006 May 2006	MW-1000/GW02 5/12/2006 May 2006 Dup of MW-02/GW02	MW-02 / GW03 9/19/2006 Sept. 2006
	MCL	Human Health Tap Water					
Inorganic Constituents, Unfiltered			UNITS				
Arsenic, Total	10	0.045	ug/L	10 U	NA	NA	10 U
Cadmium, Total	5	18	ug/L	5 U	NA	NA	5 U
Lead, Total	15	15	ug/L	10 U	NA	NA	10 U
Zinc, Total	5,000	11,000	ug/L	440	NA	NA	63
Inorganic Constituents, Filtered			UNITS				
Arsenic, Filtered	10	0.045	ug/L	NA	10 U	NA	10 U
Cadmium, Filtered	5	18	ug/L	NA	5 U	NA	5 U
Lead, Filtered	15	15	ug/L	NA	10 U	NA	10 U
Zinc, Filtered	5,000	11,000	ug/L	NA	25	NA	56
Water Quality Parameters			UNITS				
Specific Conductance	NAv	NAv	umhos/cm	NM	6,600	NM	5,100
pH	6.5 - 8.5	NAv	Std Unit	NM	6.9	NM	7.4
Turbidity	NAv	NAv	NTU	NM	5.7	NM	24.4
Alkalinity, Total	NAv	NAv	mg/L	NA	308	301	342
Chloride	250	NAv	mg/L	NA	598	578	800
Nitrite/Nitrate as N	1	1	mg/L	NA	0.58	0.51	0.71
Sulfate	250	NAv	mg/L	NA	1,420	1,400	1,970
Chemical Oxygen Demand	NAv	NAv	mg/L	NA	5 U	5 U	5 U
Total Organic Carbon	NAv	NAv	mg/L	NA	0.66	0.6	NA

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-37
Groundwater Sample Results for Monitoring Well MW-3
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

	USEPA Region VI Screening Levels		Sample ID:	MW-03/GW01	MW-1000/GW01	MW-03/GW02	MW-1001/GW02	MW-03/GW03	MW-1000/GW03
			Date Sampled:	9/29/2005	9/29/2005	5/12/2006	5/12/2006	9/19/2006	9/19/2006
Parameter	MCL	Human Health Tap Water	Sampling Event:	Sept. 2005	Sept. 2005	May 2006	May 2006	Sept. 2006	Sept. 2006
			Comments:		Dup MW-03/GW01		Dup MW-03/GW02		Dup MW-03/GW03
Inorganic Constituents, Unfiltered			UNITS						
Arsenic, Total	10	0.045	ug/L	10 U	10 U	NA	NA	10 U	10 U
Cadmium, Total	5	18	ug/L	5 U	5 U	NA	NA	5 U	5 U
Lead, Total	15	15	ug/L	87	233	NA	NA	10 U	10 U
Zinc, Total	5,000	11,000	ug/L	190	533	NA	NA	12	12
Inorganic Constituents, Filtered			UNITS						
Arsenic, Filtered	10	0.045	ug/L	NA	NA	10 U	10 U	10 U	10 U
Cadmium, Filtered	5	18	ug/L	NA	NA	5 U	5 U	5 U	5 U
Lead, Filtered	15	15	ug/L	NA	NA	10 U	10 U	10 U	10 U
Zinc, Filtered	5,000	11,000	ug/L	NA	NA	5 U	5 U	11	9
Water Quality Parameters			UNITS						
Specific Conductance	NAv	NAv	umhos/cm	1,800	NM	1,500	NM	1,600	NM
pH	6.5 - 8.5	NAv	Std Unit	7.2	NM	7.3	NM	7.0	NM
Turbidity	NAv	NAv	NTU	16	NM	4.1		17.1	NM
Alkalinity, Total	NAv	NAv	mg/L	343	306	NA	NA	404	417
Chloride	250	NAv	mg/L	65.4	60	NA	NA	51.4	56.1
Nitrite/Nitrate as N	1	1	mg/L	0.43	0.41	NA	NA	0.77	0.7
Sulfate	250	NAv	mg/L	388	386	NA	NA	391	384
Chemical Oxygen Demand	NAv	NAv	mg/L	20.6	15.2	NA	NA	5 U	5 U
Total Organic Carbon	NAv	NAv	mg/L	1.76	1.55	NA	NA	1.9	1.62

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

Dup - Field Duplicate sample

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-38
Groundwater Sample Results for Monitoring Well MW-4
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	MW-04/GW01 9/29/2005 Sept. 2005	MW-04/GW02 5/12/2006 May 2006	MW-04 / GW03 9/19/2006 Sept. 2006
	MCL	Human Health Tap Water				
Inorganic Constituents, Unfiltered			UNITS			
Arsenic, Total	10	0.045	ug/L	10 U	NA	10 U
Cadmium, Total	5	18	ug/L	105	NA	48
Lead, Total	15	15	ug/L	13	NA	10 U
Zinc, Total	5,000	11,000	ug/L	4,900	NA	1,830
Inorganic Constituents, Filtered			UNITS			
Arsenic, Filtered	10	0.045	ug/L	NA	10 U	10 U
Cadmium, Filtered	5	18	ug/L	NA	64	47
Lead, Filtered	15	15	ug/L	NA	10 U	10 U
Zinc, Filtered	5,000	11,000	ug/L	NA	2,830	1,790
Water Quality Parameters			UNITS			
Specific Conductance	NAv	NAv	umhos/cm	1,200	600	1,200
pH	6.5 - 8.5	NAv	Std Unit	6.6	6.9	7.0
Turbidity	NAv	NAv	NTU	41.2	0.42	22.9
Alkalinity, Total	NAv	NAv	mg/L	168	NA	224
Chloride	250	NAv	mg/L	11	NA	10 U
Nitrite/Nitrate as N	1	1	mg/L	0.08	NA	0.17
Sulfate	250	NAv	mg/L	431	NA	399
Chemical Oxygen Demand	NAv	NAv	mg/L	16.2	NA	5 U
Total Organic Carbon	NAv	NAv	mg/L	1.46	NA	1.31

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-39
Groundwater Sample Results for Monitoring Well MW-4D

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	MW-04D / GW03 9/19/2006 Sept. 2006 Installed RI Phase II
	MCL	Human Health Tap Water		
Inorganic Constituents, Unfiltered			UNITS	
Arsenic, Total	10	0.045	ug/L	10 U
Cadmium, Total	5	18	ug/L	5 U
Lead, Total	15	15	ug/L	10 U
Zinc, Total	5,000	11,000	ug/L	16
Inorganic Constituents, Filtered			UNITS	
Arsenic, Filtered	10	0.045	ug/L	10 U
Cadmium, Filtered	5	18	ug/L	5 U
Lead, Filtered	15	15	ug/L	10 U
Zinc, Filtered	5,000	11,000	ug/L	17
Water Quality Parameters			UNITS	
Specific Conductance	NAv	NAv	umhos/cm	2,300
pH	6.5 - 8.5	NAv	Std Unit	7.9
Turbidity	NAv	NAv	NTU	7.2
Alkalinity, Total	NAv	NAv	mg/L	326
Chloride	250	NAv	mg/L	26.5
Nitrite/Nitrate as N	1	1	mg/L	0.1 U
Sulfate	250	NAv	mg/L	839
Chemical Oxygen Demand	NAv	NAv	mg/L	5 U
Total Organic Carbon	NAv	NAv	mg/L	1.73

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-40
Groundwater Sample Results for Monitoring Well MW-5
Remedial Investigaton Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	MW-05/GW01 9/29/2005 Sept. 2005	MW-05/GW02 5/12/2006 May 2006	MW-05 / GW03 9/19/2006 Sept. 2006
	MCL	Human Health Tap Water				
Inorganic Constituents, Unfiltered			UNITS			
Arsenic, Total	10	0.045	ug/L	17	NA	10 U
Cadmium, Total	5	18	ug/L	13	NA	5 U
Lead, Total	15	15	ug/L	58	NA	10 U
Zinc, Total	5,000	11,000	ug/L	609	NA	117
Inorganic Constituents, Filtered			UNITS			
Arsenic, Filtered	10	0.045	ug/L	10 U	NA	10 U
Cadmium, Filtered	5	18	ug/L	5 U	NA	5 U
Lead, Filtered	15	15	ug/L	10 U	NA	10 U
Zinc, Filtered	5,000	11,000	ug/L	27	NA	77
Water Quality Parameters			UNITS			
Specific Conductance	NAv	NAv	umhos/cm	NM	4,100	3,900
pH	6.5 - 8.5	NAv	Std Unit	NM	7.2	7.2
Turbidity	NAv	NAv	NTU	NM	67.3	222
Alkalinity, Total	NAv	NAv	mg/L	NA	223	384
Chloride	250	NAv	mg/L	NA	28.3	30.3
Nitrite/Nitrate as N	1	1	mg/L	NA	0.1 U	0.17
Sulfate	250	NAv	mg/L	NA	1,840	2,200
Chemical Oxygen Demand	NAv	NAv	mg/L	NA	6	5.5
Total Organic Carbon	NAv	NAv	mg/L	NA	0.67	1.82

Notes:

Dectections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-41
Groundwater Sample Results for Monitoring Well MW-6
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event:	MW-06 / GW03 9/19/2006 Sept. 2006
	MCL	Human Health Tap Water	Comments:	Off-Site Well Installed RI Phase II
Inorganic Constituents, Unfiltered			UNITS	
Arsenic, Total	10	0.045	ug/L	10 U
Cadmium, Total	5	18	ug/L	5 U
Lead, Total	15	15	ug/L	10 U
Zinc, Total	5,000	11,000	ug/L	5 U
Inorganic Constituents, Filtered			UNITS	
Arsenic, Dissolved	10	0.045	ug/L	10 U
Cadmium, Dissolved	5	18	ug/L	5 U
Lead, Dissolved	15	15	ug/L	10 U
Zinc, Dissolved	5,000	11,000	ug/L	5 U
Water Quality Parameters			UNITS	
Specific Conductance	NAv	NAv	umhos/cm	1,300
pH	6.5 - 8.5	NAv	Std Unit	7.3
Turbidity	NAv	NAv	NTU	24.9
Alkalinity, Total	NAv	NAv	mg/L	249
Chloride	250	NAv	mg/L	14.6
Nitrite/Nitrate as N	1	1	mg/L	0.16
Sulfate	250	NAv	mg/L	448
Chemical Oxygen Demand	NAv	NAv	mg/L	5 U
Total Organic Carbon	NAv	NAv	mg/L	1.61

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-42
Groundwater Sample Results for On-Site Residential Well
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Screening Levels		Sample ID: Date Sampled: Sampling Event: Comments:	RW-01/GW01 10/3/2005 Oct. 2005	RW-01/GW02 5/12/2006 May 2006	RW-01 / GW03 9/20/2006 Sept. 2006
	MCL	Human Health Tap Water				
Inorganic Constituents, Unfiltered			UNITS			
Arsenic, Total	10	0.045	ug/L	10 U	NA	10 U
Cadmium, Total	5	18	ug/L	5 U	NA	5 U
Lead, Total	15	15	ug/L	28	NA	10 U
Zinc, Total	5,000	11,000	ug/L	1,030	NA	183
Inorganic Constituents, Filtered			UNITS			
Arsenic, Dissolved	10	0.045	ug/L	NA	10 U	10 U
Cadmium, Dissolved	5	18	ug/L	NA	5 U	5 U
Lead, Dissolved	15	15	ug/L	NA	10 U	10 U
Zinc, Dissolved	5,000	11,000	ug/L	NA	126	10
Water Quality Parameters			UNITS			
Specific Conductance	NAv	NAv	umhos/cm	800	700	800
pH	6.5 - 8.5	NAv	Std Unit	7.5	7.2	7.4
Turbidity	NAv	NAv	NTU	43.3	34.8	14.5
Alkalinity, Total	NAv	NAv	mg/L	358	NA	365
Chloride	250	NAv	mg/L	10.7	NA	11.1
Nitrite/Nitrate as N	1	1	mg/L	0.05 U	NA	0.1 U
Sulfate	250	NAv	mg/L	40.7	NA	46
Chemical Oxygen Demand	NAv	NAv	mg/L	20.6	NA	5 U
Total Organic Carbon	NAv	NAv	mg/L	1.73	NA	1.7

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-4.

Description of data qualifiers is presented on Table 4-6.

mg/L - milligrams per liter

NA - Not analyzed

NAv - Not available

NM - Not measured

Std Unit - Standard Unit

ug/L - micrograms per liter

umhos/cm - micromhos per centimeter

USEPA - United States Environmental Protection Agency

Table 4-43
Background Vegetation Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Collected	Comments	Units	Arsenic, ICP	Cadmium, ICP	Lead, ICP	Zinc, ICP
Unwashed Blackberries							
OX-UGB	6/16/2004	Unripe berries	mg/Kg	0.012 J U*	0.0091 U	0.19 U*	2.1 J-
OX-UBB	6/16/2004		mg/Kg	0.014 J U*	0.0091 U	0.19 U*	2.3 J-
BG-EC-01/BR01U	6/28/2005	Dup of BG-EC-01/BR01U	mg/Kg	0.0083 U	0.0083 U	0.057 J U*	1.5 J U*
BG-EC-01/BR01UDUP	6/28/2005		mg/Kg	0.0087 U	0.0087 U	0.077 J U*	1.6 J U*
Washed Blackberries							
OX-WBB	6/16/2004		mg/Kg	0.014 J U*	0.0083 U	0.22 U*	2.1 J-
BG-EC-01/BR01W	6/28/2005		mg/Kg	0.0081 U	0.0081 U	0.095 J U*	1.4 J U*
Unwashed Leaves from Blackberry Bush							
OX-UBB-L	6/16/2004		mg/Kg	0.051 J U*	0.013 J U*	0.45 U*	7.3 J-
BG-EC-01/LV01U	6/28/2005		mg/Kg	0.019 J	0.01 U	0.29 U*	8.1
Washed Leaves from Blackberry Bush							
OX-WBB-L	6/16/2004		mg/Kg	0.039 J U*	0.012 J U*	0.91 J*	7.6 J-
BG-EC-01/LV01W	6/28/2005		mg/Kg	0.0078 U	0.0078 U	0.28 U*	5.0
Washed Roots from Blackberry Bush							
OX-WBB-R	6/16/2004		mg/Kg	0.15 J	0.07 J U*	9.3 J*	17.1 J-
BG-EC-01/RT01W	6/28/2005		mg/Kg	0.096 J	0.0096 J U*	0.6 U*	8.6

Notes:

Detections are presented in **bold**.

Description of data qualifiers is presented on Table 4-6.

Background vegetation samples were collected from the Oxley Nature Center in Tulsa, Oklahoma.

No blackberries were present at the Oxley Nature Center during the July 2006 sampling event.

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

Table 4-44
Adjacent Property Vegetation Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Collected	Comments	Units	Arsenic, ICP	Cadmium, ICP	Lead, ICP	Zinc, ICP
Unwashed Blackberries							
BM-UGB	6/16/2004	Unripe berries	mg/Kg	0.014 J U*	0.034 J U*	0.69 U*	8.9 J
BM-UBB	6/16/2004		mg/Kg	0.0089 U	0.0089 U	0.18 U*	3.6
EC-01/BR02U	6/28/2005	Reanalysis	mg/Kg	0.029 J U*	0.0093 U	30 R	5.6
EC-01/BR02U	6/28/2005		mg/Kg	0.0088 U	0.0088 U	0.09 J	2.1
EC-01/BR03U	7/6/2006		mg/Kg	0.0074 U	0.11 J U*	0.0091 J	4.0
Washed Blackberries							
BM-WBB	6/16/2004	Water used to Rinse Berries	mg/Kg	0.0099 U	0.0099 U	0.19 J U*	2.8
EC-01/BR02W	6/28/2005		mg/Kg	0.0099 U	0.0099 U	0.41 U*	3.2
EC-01/BR03W	7/6/2006		mg/Kg	0.0074 U	0.1 J U*	0.07 J U*	3.9
EC-01/RINSATE03	7/6/2006		mg/L	0.00011 J	0.00042 J	0.0044	0.0535
Unwashed Leaves from Blackberry Bush							
BM-UBB-L	6/16/2004	Dup of EC-01/LV02U	mg/Kg	0.0096 U	0.039 J U*	0.29 U*	27.6
EC-01/LV02U	6/28/2005		mg/Kg	0.047 J U*	0.036 J U*	1.8 U*	37.9
EC-1000/LV02U	6/28/2005		mg/Kg	0.028 J U*	0.035 J U*	0.91 U*	29.9
Washed Leaves from Blackberry Bush							
BM-WBB-L	6/16/2004		mg/Kg	0.012 J U*	0.027 J U*	0.28 U*	11.9 J
EC-01/LV02W	6/28/2005		mg/Kg	0.0085 U	0.018 J U*	0.75 U*	22.6
Washed Roots from Blackberry Bush							
BM-WBB-R	6/16/2004		mg/Kg	0.1 J	0.35 U*	3.1	71.5
EC-01/RT02W	6/28/2005		mg/Kg	0.17	0.56	4.3	125

Notes:

Detections are presented in **bold**.

Description of data qualifiers is presented on Table 4-6.

Samples were collected from 10710 E 136th Street N, which is adjacent to the TFM site.

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Table 4-45
On-Site Vegetation Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Collected	Comments	Units	Arsenic, ICP	Cadmium, ICP	Lead, ICP	Zinc, ICP
Unwashed Blackberries							
TFM-UGB-1	6/16/2004	Unripe Berries	mg/Kg	0.048 J U*	0.43 U*	1.4 J*	10.2 J-
TFM-UGB-2	6/22/2004	Unripe Berries	mg/Kg	0.057 J	0.4 U*	2.1 J*	10.4 J-
TFM-UBB-1	6/16/2004	Reanalysis	mg/Kg	0.39 J-	0.26 U*	32.9 J*	30.9 J-
TFM-UBB-2	6/22/2004		mg/Kg	0.36 J-	0.17 J U*	16.2 J*	27 J-
EC-02/BR02U	6/28/2005		mg/Kg	0.0093 U	0.044 J U*	0.9 U*	5.8
EC-02/BR02U	6/28/2005		mg/Kg	0.011 J U*	0.061 J U*	0.73	3.6
EC-02/BR03U	7/6/2006		mg/Kg	0.024 J	0.14 J	0.88	4.7
Washed Blackberries							
TFM-WBB-1	6/16/2004	Water Used to Rinse Berries	mg/Kg	0.048 J U*	0.21 U*	3.3 J*	6.9 J-
TFM-WBB-2	6/22/2004		mg/Kg	0.099 J	0.1 J U*	6.7 J*	6.5 J-
EC-02/BR02W	6/28/2005		mg/Kg	0.0089 U	0.043 J U*	0.76 U*	4.1
EC-02/BR03W	7/6/2006		mg/Kg	0.11 J	0.093 J U*	2.5	4.9
EC-02/RINSATE03	7/6/2006		mg/L	0.00087 J	0.00052 J	0.0504	0.114
Unwashed Leaves from Blackberry Bush							
TFM-UBB-L-1	6/16/2004		mg/Kg	0.37 J-	0.74 U*	16.2 J*	42.6 J-
TFM-UBB-L-2	6/22/2004		mg/Kg	0.76 J-	0.71 U*	38.5 J*	76.1 J-
EC-02/LV02U	6/28/2005		mg/Kg	0.43	0.32 U*	24.5	53.5
Washed Leaves from Blackberry Bush							
TFM-WBB-L-1	6/16/2004		mg/Kg	0.069 J	0.36 U*	2.7 J*	13 J-
TFM-WBB-L-2	6/22/2004		mg/Kg	0.17 J-	0.26 U*	5.7 J*	19.1 J-
EC-02/LV02W	6/28/2005		mg/Kg	0.12 J	0.15 J U*	7.9	24.3
Washed Roots from Blackberry Bush							
TFM-WBB-R-1	6/16/2004		mg/Kg	1.6 J-	2.2	237 J*	365 J-
TFM-WBB-R-2	6/22/2004		mg/Kg	0.59 J-	2.5	142 J*	178 J-
EC-02/RT02W	6/28/2005		mg/Kg	8.5	2.9	489	599

Notes:

Detections are presented in **bold**.

Description of data qualifiers is presented on Table 4-6.

Samples were collected from bushes growing along the eastern fenceline of the TFM site.

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Table 4-46
Soil Surrounding Blackberry Bush Roots Results

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Collected	Arsenic, ICP mg/kg	Cadmium, ICP mg/kg	Lead, ICP mg/kg	Zinc, ICP mg/kg	pH Std Unit
USEPA Region VI Ecological		31	0.4	15	120	--
USEPA Region VI Industrial Indoor Worker		3.8	1,000	800	100,000	--
USEPA Region VI Industrial Outdoor Worker		1.8	560	800	100,000	--
USEPA Region VI Residential Soil		0.39	39	400	23,000	--
Background - Oxley Nature Center						
OX-BB-S	6/16/2004	5.5	0.4 J U*	12.9	35.6	5.6
BG-EC-01/SS02	6/28/2005	5.5	0.43 J U*	11.8	42.9	6.8
Adjacent Property : (b) (6)						
BM-BB-S	6/16/2004	6.8	1.8	65.2	211	5.7
EC-01/SS02	6/28/2005	5.7	3.1	79.7	377	6.6
On-Site Location						
TFM-BB-S-1	6/16/2004	908	71	45,400	43,100	6.6
TFM-BB-W-1	6/16/2004	968	29.3 J	24,400	82,000	6.9
TFM-BB-S-2	6/22/2004	961	61	36,000	96,800	7
TFM-BB-W-2	6/22/2004	735	60.2	21,500	22,800	7
EC-02/SS02	6/28/2005	1,170	77.2	38,000	38,200	6.8

Sample ID	Date Collected	Units	Arsenic, TCLP	Cadmium, TCLP	Lead, TCLP
Toxicity Characteristic Maximum Concentrations			5	1	5
Background - Oxley Nature Center					
BG-EC-01/SS02	6/28/2005	mg/L	0.0066 J	0.00082 J	0.0027 J
On-Site Location					
TFM-BB-W-1	6/16/2004	mg/L	0.4 U	0.585	322
TFM-BB-S-2	6/22/2004	mg/L	0.4 U	0.76	360
EC-02/SS02	6/28/2005	mg/L	0.4 U	0.86	192

Notes:

Detections are presented in **bold**.

Screening values are presented on Table 4-1.

Description of data qualifiers is presented on Table 4-6.

ICP = Inductively Coupled Plasma

ID = Identification

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

TCLP = Toxicity Characteristic Leaching Procedure

Table 4-47
Background Air Monitoring Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Human Health Screening Levels	National Emissions Standards for Hazardous Air Pollutants	Sample ID: Location: Date Sampled: Comments:	Background Station (Upwind)							
				AQ-02/AR-01	AQ-02/AR-02	AQ-02/AR-03	AQ-01/AR-04	AQ-01/AR-05	AQ-01/AR-06	AQ-01/AR-07	Background
				South	South	South	North	North	North	North	Upwind
				8/24/2005	8/25/2005	8/26/2005	8/27/2005	8/28/2005	8/29/2005	8/30/2005	8/24 - 8/30/05
				Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	7-Day Avg
Inorganic Constituents				Units							
Arsenic, Total	0.00045	NAv	µg/m ³	0.00227 U	0.00218 U	0.00240 J	0.00267 U	0.00216 U	0.00216 U	0.00293 J	0.00267 J
Cadmium, Total	0.0011	NAv	µg/m ³	0.00023 U	0.00022 U	0.00023 U	0.00027 U	0.00022 U	0.00022 U	0.00023 U	0.00023 U
Lead, Total	NAv	1.5	µg/m ³	0.00264 J	0.00412 J	0.00492	0.00339 J	0.00274 J	0.00321 J	0.00431 J	0.00362 J
Zinc, Total	1100	NAv	µg/m ³	0.0203 U*	0.0300 U*	0.0258 U*	0.0238 U*	0.0152 U*	0.0186 U*	0.0277 U*	0.0231 U*
Physical Parameters				Units							
PM10	NAv	NAv	µg/m ³	20.2	24.3	13.6	19.3	18.4	19.5	25.6	20.1
TSP	NAv	NAv	µg/m ³	30.9	39.4	22.7	26.8	26.4	34.0	40.4	31.5
Weather Parameters				Units							
Temp. Range	NAp	NAp	high / low (°F)	92 / 73	94 / 74	96 / 71	92 / 70	92 / 73	92 / 69	90 / 67	93 / 71
Average Temp.	NAp	NAp	°F	83	84	84	81	83	81	79	84
Average Humidity	NAp	NAp	%	75	67	63	73	71	63	64	68
Precipitation	NAp	NAp	in	0.00	0.00	0.66	0.05	0.00	0.00	0.00	0.22
Pressure	NAp	NAp	inHg	29.92	29.99	29.87	29.85	29.82	29.81	29.76	29.93
Wind Speed	NAp	NAp	mph	9	7	10	5	5	9	4	9
Wind Direction	NAp	NAp	NAp	SE	SSE	S	NW	NNE	N	NNW	NAp

Notes:

Detections are presented in **bold**.

Screening levels are presented on Table 4-5.

Description of data qualifiers is presented on Table 4-6.

NAv - Not available

µg/m³ = micrograms per cubic meter

PM10 - Small airborne particulate matter

TSP - Total Suspended Particulates

USEPA - United States Environmental Protection Agency

Temp. = Temperature

NAp = Not Applicable

°F = degrees Fahrenheit

in = inches

inHg = inches of mercury

mph = miles per hour

Air Quality samples were collected over a 7-day period from 8/24/2005 to 8/30/2005.

Results for each day's 24-hour sample are presented in this table (see comments line for indication of day) as well as the 7-day average concentration.

The background sampling location was determined on a daily basis by the prevailing wind direction. The background location was identified as the station located upwind at the time of sampling. During this sampling event, the background location changed from the southern station (AQ-02) to the northern location (AQ-01) due to a change in the prevailing wind direction as a weather front moved into the area.

Table 4-48
Perimeter Air Monitoring Sample Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	USEPA Region VI Human Health Screening Levels	National Emissions Standards for Hazardous Air Pollutants	Sample ID: Location: Date Sampled: Comments:	Investigative Station (Downwind)								Investigative Downwind 8/24 - 8/30/05 7-Day Avg
				AQ-01/AR-01	AQ-01/AR-02	AQ-01/AR-03	AQ-02/AR-04	AQ-02/AR-05	AQ-02/AR-06	AQ-02/AR-07		
				North	North	North	South	South	South	South		
				8/24/2005 Day 1	8/25/2005 Day 2	8/26/2005 Day 3	8/27/2005 Day 4	8/28/2005 Day 5	8/29/2005 Day 6	8/30/2005 Day 7		
Inorganic Constituents				Units								
Arsenic, Total	0.00045	NAv	µg/m ³	0.00216 U	0.00216 U	0.00214 U	0.00216 U	0.00212 U	0.00214 U	0.00250 J	0.00250 J	
Cadmium, Total	0.0011	NAv	µg/m ³	0.00022 U	0.00022 U	0.00022 U	0.00022 U	0.00022 U	0.00022 U	0.00022 U	0.00022 U	
Lead, Total	NAv	1.5	µg/m ³	0.00245 J	0.00333 J	0.00347 J	0.00338 J	0.00453	0.00422	0.00655	0.00399 J	
Zinc, Total	1100	NAv	µg/m ³	0.0221 U*	0.0261 U*	0.0220 U*	0.0249 U*	0.0241 U*	0.0219 U*	0.0324 U*	0.0248 U*	
Physical Parameters				Units								
PM10	NAv	NAv	µg/m ³	22.6	25.0	14.8	18.1	17.3	16.8	23.8	19.8	
TSP	NAv	NAv	µg/m ³	32.4	38.3	23.0	28.0	26.7	32.8	40.3	31.6	
Weather Parameters				Units								
Temp. Range	NAp	NAp	high / low (°F)	92 / 73	94 / 74	96 / 71	92 / 70	92 / 73	92 / 69	90 / 67	93 / 71	
Average Temp.	NAp	NAp	°F	83	84	84	81	83	81	79	82	
Average Humidity	NAp	NAp	%	75	67	63	73	71	63	64	68	
Precipitation	NAp	NAp	in	0.00	0.00	0.66	0.05	0.00	0.00	0.00	0.10	
Pressure	NAp	NAp	inHg	29.92	29.99	29.87	29.85	29.82	29.81	29.76	29.86	
Wind Speed	NAp	NAp	mph	9	7	10	5	5	9	4	7	
Wind Direction	NAp	NAp	NAp	SE	SSE	S	NW	NNE	N	NNW	NAp	

Notes:

Detections are presented in **bold**.

Screening levels are presented on Table 4-5.

Description of data qualifiers is presented on Table 4-6.

NAv - Not available

µg/m³ = micrograms per cubic meter

PM10 - Small airborne particulate matter

TSP - Total Suspended Particulates

USEPA - United States Environmental Protection Agency

Temp. = Temperature

NAp = Not Applicable

°F = degrees Fahrenheit

in = inches

inHg = inches of mercury

mph = miles per hour

Air Quality samples were collected over a 7-day period from 8/24/2005 to 8/30/2005.

Results for each day's 24-hour sample are presented in this table (see comments line for indication of day) as well as the 7-day average concentration.

The investigative sampling location was determined on a daily basis by the prevailing wind direction. The investigative location was identified as the station located downwind at the time of sampling. During this sampling event, the investigative location changed from the northern station (AQ-01) to the southern location (AQ-02) due to a change in the prevailing wind direction as a weather front moved into the area.

Table 5-1
Chemical and Physical Properties of Arsenic, Cadmium, Lead, and Zinc

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Present in Media								Chemical/Physical Properties			
	Soil	GW	SW	Sediment	Air	Unwashed Produce	Washed Produce	Fish Tissue	Volatility	Sorption	Solubility	Biodegradation
Metals												
Arsenic	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	NA	NA	Insoluble	No
Cadmium	Yes	Yes	Yes	Yes	No	Yes	No	No	NA	NA	Insoluble	No
Lead	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	NA	NA	Insoluble	No
Zinc	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	NA	NA	Insoluble	No

Notes:

GW = Groundwater

SW = Surface Water

Source: Agency for Toxic Substances and Disease Registry (ATSDR) web site.

Additional information taken from Risk* Assistant database (HRI, 1995).

NA = data not available for elemental metals; physical and chemical properties of the various metals compounds vary significantly and are not shown here.

Table 6-1
Summary of COPCs

Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

	Arsenic	Cadmium	Lead	Zinc
On-Site Waste Area				
Shallow Soil (0-2 ft bgs)	X	X	X	X
Comprehensive Soil	X	X	X	X
Groundwater	X	X	X	
Air	X		X	
Surface Water in Pond 1		X	X	X
Surface Water in Pond 2		X	X	X
Surface Water in Pond 3			X	X
Surface Water in Mid-Site Ravine		X	X	X
Surface Water in On-Site Cistern				X
Sediment in Pond 1	X	X	X	X
Sediment in Pond 2	X	X	X	
Sediment in Pond 3	X	X	X	
Sediment in Mid-Site Ravine	X	X	X	X
Washed Produce	X		X	X
Unwashed Produce	X	X	X	X
On-Site Non-Waste Area				
Shallow Soil (0-2 ft bgs)	X	X	X	X
Comprehensive Soil	X	X	X	
Groundwater	X	X	X	
Air	X		X	
Surface Water in Pond 4		X		X
Surface Water in Pond 5				X
Sediment in Pond 4	X	X	X	
Sediment in Pond 5				
Off-Site Media				
Groundwater				
Surface Water in Ditches along Rail Tracks		X	X	X
Surface Water in Strip Mine Pit				
Sediment in Ditches along Rail Tracks	X	X	X	X
Sediment in Strip Mine Pit	X	X	X	
Fish Tissue in Strip Mine Pit				
Off-Site Soil by Property				
(b) (6) (b) (6) (b) (6) (b) (6)	X X		X	
Cherokee Nation/ITEC Property City Park	X			

Table 6-1
Summary of COPCs
Remedial Investigaiton Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

	Arsenic	Cadmium	Lead	Zinc
Off-Site Properties (continued)				
(b) (6)	X			
Faith Assembly Church	X		X	
(b) (6)	X			
(b) (6)	X	X	X	X
(b) (6)				
(b) (6)	X		X	
High School Property	X			
(b) (6)	X			
(b) (6)				
(b) (6)	X		X	
(b) (6)	X			
Middle School Property				
(b) (6)				
Shallow Soil (0-2 ft bgs)	X	X	X	
Washed Produce				X
(b) (6)				
Shallow Soil (0-2 ft bgs)	X		X	
Surface Water in Farm Pond				
Sediment in Farm Pond	X			
(b) (6)	X			
Pioneer Park	X			
(b) (6)				
Rural Fire Department Property	X			
(b) (6)				
(b) (6)	X			
(b) (6)	X		X	
(b) (6)	X			
(b) (6)	X			
(b) (6)	X		X	
(b) (6)	X		X	
(b) (6)	X		X	
Shallow Soil (0-2 ft bgs)	X		X	
Surface Water in Ditches along Highway 169		X	X	X
Surface Water in Intermittent Ditch				X
Sediment in Ditches along Highway 169	X	X	X	
Sediment in Intermittent Ditch	X			
(b) (6)				
(b) (6)				
(b) (6)				
(b) (6)	X			
Water Tower Property				
Wilson Elementary Property				
(b) (6)	X			
Highway 169 Drainage Ditches	X	X	X	X

Notes:

COPC - Chemical of Potential Concern

See Appendix N Tables 2.1 - 2.84 for additional information.

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

On-Site Waste Area Shallow Soil Data Set					
PZ-07/SS01	SP-55/SS01	TR-08/SS01	TR-17/SS01	PZ-07/SS02	SP-49/SS02
PZ-09/SS01	SP-1015/SS01	TR-09/SS01	TR-18/SS01	PZ-1000/SS02	SP-55/SS02
SP-27/SS01	TR-01/SS01	TR-10/SS01	TR-19/SS01	PZ-09/SS02	TR-07/SS02
SP-37/SS01	TR-1000/SS01	TR-11/SS01	TR-20/SS01	SP-27/SS02	TR-11/SS02
SP-38/SS01	TR-02/SS01	TR-12/SS01	TR-21/SS01	SP-37/SS02	TR-17/SS02
SP-39/SS01	TR-03/SS01	TR-13/SS01	EC-02/SS02	SP-38/SS02	TR-04/SS03
SP-40/SS01	TR-04/SS01	TR-14/SS01	TFM-BB-S-1	SP-39/SS02	TR-06/SS03
SP-41/SS01	TR-05/SS01	TR-1003/SS01	TFM-BB-W-1	SP-40/SS02	TR-17/SS03
SP-48/SS01	TR-06/SS01	TR-15/SS01	TFM-BB-S-2	SP-41/SS02	
SP-49/SS01	TR-07/SS01	TR-16/SS01	TFM-BB-W-2	SP-48/SS02	

On-Site Waste Area Shallow and Subsurface Soil Data Set						
PZ-07/SS01	TR-03/SS01	TR-17/SS01	SP-38/SS02	TR-15/SS02	TR-02/SS03	TR-16/SS03
PZ-09/SS01	TR-04/SS01	TR-18/SS01	SP-39/SS02	TR-17/SS02	TR-03/SS03	TR-17/SS03
SP-27/SS01	TR-05/SS01	TR-19/SS01	SP-40/SS02	TR-19/SS02	TR-04/SS03	TR-18/SS03
SP-37/SS01	TR-06/SS01	TR-20/SS01	SP-41/SS02	PZ-07/SS03	TR-05/SS03	TR-1004/SS03
SP-38/SS01	TR-07/SS01	TR-21/SS01	SP-48/SS02	SP-27/SS03	TR-1001/SS03	TR-19/SS03
SP-39/SS01	TR-08/SS01	EC-02/SS02	SP-49/SS02	SP-37/SS03	TR-06/SS03	TR-20/SS03
SP-40/SS01	TR-09/SS01	TFM-BB-S-1	SP-55/SS02	SP-38/SS03	TR-07/SS03	TR-21/SS03
SP-41/SS01	TR-10/SS01	TFM-BB-W-1	TR-01/SS02	SP-39/SS03	TR-08/SS03	PZ-07/SS04
SP-48/SS01	TR-11/SS01	TFM-BB-S-2	TR-03/SS02	SP-1010/SS03	TR-09/SS03	PZ-09/SS04
SP-49/SS01	TR-12/SS01	TFM-BB-W-2	TR-05/SS02	SP-40/SS03	TR-10/SS03	PZ-1002/SS04
SP-55/SS01	TR-13/SS01	PZ-07/SS02	TR-07/SS02	SP-41/SS03	TR-11/SS03	PZ-07/SS05
SP-1015/SS01	TR-14/SS01	PZ-1000/SS02	TR-09/SS02	SP-48/SS03	TR-12/SS03	
TR-01/SS01	TR-1003/SS01	PZ-09/SS02	TR-1002/SS02	SP-49/SS03	TR-13/SS03	
TR-1000/SS01	TR-15/SS01	SP-27/SS02	TR-11/SS02	SP-1013/SS03	TR-14/SS03	
TR-02/SS01	TR-16/SS01	SP-37/SS02	TR-13/SS02	TR-01/SS03	TR-15/SS03	

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

On-Site Non-Waste Area Shallow Soil Data Set							
PZ-04/SS01	SP-12/SS01	SP-25/SS01	SP-44/SS01	SP-60/SS01	SP-20/SS02	SP-32/SS02	SP-51/SS02
SP-01/SS01	SP-13/SS01	SP-26/SS01	SP-45/SS01	PZ-04/SS02	SP-21/SS02	SP-33/SS02	SP-52/SS02
SP-1000/SS01	SP-14/SS01	SP-28/SS01	SP-46/SS01	SP-01/SS02	SP-22/SS02	SP-34/SS02	SP-53/SS02
SP-02/SS01	SP-15/SS01	SP-29/SS01	SP-47/SS01	SP-03/SS02	SP-1005/SS02	SP-35/SS02	SP-54/SS02
SP-03/SS01	SP-16/SS01	SP-30/SS01	SP-50/SS01	SP-06/SS02	SP-23/SS02	SP-36/SS02	SP-56/SS02
SP-04/SS01	SP-17/SS01	SP-31/SS01	SP-51/SS01	SP-1001/SS02	SP-24/SS02	SP-1009/SS02	SP-57/SS02
SP-05/SS01	SP-18/SS01	SP-32/SS01	SP-52/SS01	SP-09/SS02	SP-25/SS02	SP-42/SS02	SP-58/SS02
SP-06/SS01	SP-19/SS01	SP-33/SS01	SP-53/SS01	SP-10/SS02	SP-1006/SS02	SP-43/SS02	SP-59/SS02
SP-07/SS01	SP-1004/SS01	SP-34/SS01	SP-1014/SS01	SP-11/SS02	SP-26/SS02	SP-44/SS02	SP-60/SS02
SP-08/SS01	SP-20/SS01	SP-35/SS01	SP-54/SS01	SP-13/SS02	SP-28/SS02	SP-45/SS02	SP-1016/SS02
SP-09/SS01	SP-21/SS01	SP-36/SS01	SP-56/SS01	SP-16/SS02	SP-29/SS02	SP-46/SS02	
SP-10/SS01	SP-22/SS01	SP-42/SS01	SP-57/SS01	SP-17/SS02	SP-1007/SS02	SP-1012/SS02	
SP-11/SS01	SP-23/SS01	SP-43/SS01	SP-58/SS01	SP-18/SS02	SP-30/SS02	SP-47/SS02	
SP-1002/SS01	SP-24/SS01	SP-1011/SS01	SP-59/SS01	SP-19/SS02	SP-31/SS02	SP-50/SS02	

On-Site Non-Waste Area Shallow and Subsurface Soil Data Set							
PZ-04/SS01	SP-18/SS01	SP-43/SS01	SP-06/SS02	SP-29/SS02	SP-53/SS02	SP-19/SS03	SP-44/SS03
SP-01/SS01	SP-19/SS01	SP-1011/SS01	SP-1001/SS02	SP-1007/SS02	SP-54/SS02	SP-20/SS03	SP-45/SS03
SP-1000/SS01	SP-1004/SS01	SP-44/SS01	SP-09/SS02	SP-30/SS02	SP-56/SS02	SP-21/SS03	SP-46/SS03
SP-02/SS01	SP-20/SS01	SP-45/SS01	SP-10/SS02	SP-31/SS02	SP-57/SS02	SP-22/SS03	SP-47/SS03
SP-03/SS01	SP-21/SS01	SP-46/SS01	SP-11/SS02	SP-32/SS02	SP-58/SS02	SP-23/SS03	SP-50/SS03
SP-04/SS01	SP-22/SS01	SP-47/SS01	SP-13/SS02	SP-33/SS02	SP-59/SS02	SP-24/SS03	SP-51/SS03
SP-05/SS01	SP-23/SS01	SP-50/SS01	SP-16/SS02	SP-34/SS02	SP-60/SS02	SP-25/SS03	SP-52/SS03
SP-06/SS01	SP-24/SS01	SP-51/SS01	SP-17/SS02	SP-35/SS02	SP-1016/SS02	SP-26/SS03	SP-53/SS03
SP-07/SS01	SP-25/SS01	SP-52/SS01	SP-18/SS02	SP-36/SS02	PZ-04/SS03	SP-28/SS03	SP-56/SS03
SP-08/SS01	SP-26/SS01	SP-53/SS01	SP-19/SS02	SP-1009/SS02	SP-01/SS03	SP-29/SS03	SP-59/SS03
SP-09/SS01	SP-28/SS01	SP-1014/SS01	SP-20/SS02	SP-42/SS02	SP-03/SS03	SP-30/SS03	PZ-04/SS04
SP-10/SS01	SP-29/SS01	SP-54/SS01	SP-21/SS02	SP-43/SS02	SP-06/SS03	SP-31/SS03	PZ-04/SS05
SP-11/SS01	SP-30/SS01	SP-56/SS01	SP-22/SS02	SP-44/SS02	SP-09/SS03	SP-32/SS03	
SP-1002/SS01	SP-31/SS01	SP-57/SS01	SP-1005/SS02	SP-45/SS02	SP-10/SS03	SP-1008/SS03	
SP-12/SS01	SP-32/SS01	SP-58/SS01	SP-23/SS02	SP-46/SS02	SP-11/SS03	SP-33/SS03	
SP-13/SS01	SP-33/SS01	SP-59/SS01	SP-24/SS02	SP-1012/SS02	SP-13/SS03	SP-34/SS03	
SP-14/SS01	SP-34/SS01	SP-60/SS01	SP-25/SS02	SP-47/SS02	SP-16/SS03	SP-35/SS03	
SP-15/SS01	SP-35/SS01	PZ-04/SS02	SP-1006/SS02	SP-50/SS02	SP-1003/SS03	SP-36/SS03	
SP-16/SS01	SP-36/SS01	SP-01/SS02	SP-26/SS02	SP-51/SS02	SP-17/SS03	SP-42/SS03	
SP-17/SS01	SP-42/SS01	SP-03/SS02	SP-28/SS02	SP-52/SS02	SP-18/SS03	SP-43/SS03	

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Shallow Soil Along Rail Tracks Data Set	
OSL-116/SS01	OSL-102/SS01
OSL-100/SS01	OSL-102/SS02
OSL-100/SS02	OSL-103/SS01
OSL-101/SS01	OSL-103/SS02
OSL-101/SS02	OSL-1013/SS02

Shallow Soil at (b) (6)	Data Set
OSL-96/SS01	OSL-96D/SS01
OSL-96A/SS02	OSL-96D/SS02
OSL-96C/SS01	OSL-96E/SS01
OSL-1011/SS01	OSL-96E/SS02
OSL-96C/SS02	

Shallow Soil at (b) (6)	Data Set
OSL-108/SS01	
OSL-109/SS01	
OSL-1014/SS01	

Shallow Soil at City Park Data Set
OSL-04/SS01
TSL-04/SS01
TSL-1000/SS01

Shallow Soil at (b) (6)	N Data Set
OSL-94/SS01	
OSL-94DW/SS01-GRAB	
TRB-04/SS01	

Shallow Soil at Faith Assembly Church Data Set			
OSL-34/SS01	TSL-05B/SS01	TSL-05D/SS01	TSL-05E/SS02
OSL-35/SS01	TSL-05B/SS02	TSL-05D/SS02	
TSL-05/SS01	TSL-05C/SS01	TSL-1001/SS02	
TSL-05A/SS02	TSL-05C/SS02	TSL-05E/SS01	

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Shallow Soil at (b) (6)		Data Set	
OSL-99/SS01			

Shallow Soil at (b) (6)		Data Set	
TRB-09/SS01		TRB-09E/SS01	
TRB-09A/SS02		TRB-1002/SS01	
TRB-09B/SS01		TRB-09E/SS02	
TRB-09B/SS02			
TRB-09DW/SS01-GRAB			

Shallow Soil at (b) (6)		Data Set	
OSL-68/SS01	TRB-10A/SS02	TRB-10C/SS02	TRB-10E/SS02
OSL-69/SS01	TRB-10B/SS01	TRB-10D/SS01	TRB-1003/SS02
TRB-10/SS01	TRB-10B/SS02	TRB-10D/SS02	
TRB-1000/SS01	TRB-10C/SS01	TRB-10E/SS01	

Shallow Soil at High School Property Data Set			
OSL-01/SS01			
OSL-02/SS01			

Shallow Soil at (b) (6)		Data Set	
OSL-19/SS01			

Shallow Soil at (b) (6)		N Data Set	
TRB-08/SS01		TRB-08C/SS01	
TRB-08A/SS02		TRB-08C/SS02	
TRB-08B/SS01		TRB-08E/SS01	
TRB-1001/SS01		TRB-08E/SS02	
TRB-08B/SS02			

Shallow Soil at (b) (6)		Data Set	
OSL-33/SS01			

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Shallow Soil at (b) (6)		Data Set	
OSL-48/SS01	OSL-49B/SS02	OSL-49DD/SS01	OSL-1000/SS01
OSL-49/SS01	OSL-49C/SS01	OSL-49E/SS01	EC-01/SS02
OSL-49A/SS02	OSL-49C/SS02	OSL-49E/SS02	BM-BB-S
OSL-1010/SS02	OSL-49D/SS01	OSL-49EE/SS01	
OSL-49B/SS01	OSL-49D/SS02	OSL-50/SS01	

Shallow Soil at (b) (6)		Data Set	
OSL-36/SS01	OSL-36DW/SS01-GRAB	OSL-39A/SS02	OSL-39E/SS01
OSL-36A/SS02	OSL-36E/SS01	OSL-39B/SS01	OSL-39E/SS02
OSL-36B/SS01	OSL-1008/SS01	OSL-39B/SS02	TRB-01/SS01
OSL-36B/SS02	OSL-36E/SS02	OSL-39C/SS01	
OSL-36C/SS01	OSL-37/SS01	OSL-1007/SS01	
OSL-36C/SS02	OSL-38/SS01	OSL-39C/SS02	
OSL-36D/SS01	OSL-39/SS01	OSL-39D/SS01	
OSL-36D/SS02	OSL-1001/SS01	OSL-39D/SS02	

Shallow Soil at (b) (6)	Data Set
	OSL-59/SS01

Shallow Soil at Pioneer Park Data Set
TSL-03/SS01

Shallow Soil at Rural Fire Department Data Set
OSL-27/SS01

Shallow Soil at (b) (6)	Data Set
	OSL-97A/SS01
	OSL-97D/SS02

Shallow Soil at (b) (6)	Data Set
OSL-97B/SS01	OSL-1012/SS02
OSL-97C/SS02	OSL-97G/SS01
OSL-97E/SS01	OSL-97G/SS02
OSL-97E/SS02	
OSL-97F/SS02	

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Shallow Soil at (b) (6)	Data Set
OSL-31/SS01	

Shallow Soil at (b) (6)	Data Set
OSL-17/SS01	
OSL-1002/SS01	

Shallow Soil at (b) (6)		Data Set	
OSL-12/SS01	OSL-12B/SS02	OSL-12D/SS01	OSL-1006/SS01
OSL-12A/SS02	OSL-12C/SS01	OSL-12D/SS02	OSL-12E/SS02
OSL-12B/SS01	OSL-12C/SS02	OSL-12E/SS01	

Shallow Soil at (b) (6)			Data Set
OSL-40/SS01	OSL-40C/SS02	OSL-40E/SS01	OSL-57/SS01
OSL-40A/SS02	OSL-40CC/SS01	OSL-40E/SS02	OSL-58/SS01
OSL-40B/SS01	OSL-40CCC/SS01	OSL-41/SS01	TSL-06/SS01
OSL-40B/SS02	OSL-40D/SS01	OSL-1003/SS01	TSL-07/SS01
OSL-1009/SS02	OSL-40D/SS02	OSL-46/SS01	
OSL-40C/SS01	OSL-40DD/SS01	OSL-47/SS01	

Shallow Soil at (b) (6)	Data Set
OSL-73/SS01	
OSL-1005/SS01	

Shallow Soil at (b) (6)	Data Set
OSL-25/SS01	
OSL-1004/SS01	

On-Site Groundwater Data Set				
MW-02/GW01	MW-03/GW02	MW-04 / GW03	PZ-09/GW01	PZ-02/GW01
MW-02/GW02	MW-1001/GW02	MW-04D / GW03	PZ-1001/GW01	PZ-03/GW01
MW-1000/GW02	MW-03 / GW03	MW-05/GW01	RW-01/GW01	PZ-04/GW01
MW-02 / GW03	MW-1000 / GW03	MW-05/GW02	RW-01/GW02	PZ-05/GW01
MW-03/GW01	MW-04/GW01	MW-05 / GW03	RW-01/GW03	PZ-06/GW01
MW-1000/GW01	MW-04/GW02	PZ-08/GW01	PZ-01/GW01	PZ-07/GW01

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

On-Site Air Data Set	
AQ-01/AR-01	AQ-02/AR-05
AQ-01/AR-02	AQ-02/AR-06
AQ-01/AR-03	AQ-02/AR-07
AQ-02/AR-04	

Surface Water in Pond 1 Data Set	
PD1-01/SW01	PD1-02A/SW01
PD1-02/SW01	PD1-02/SW02
PD1-02/SW01R1	PD1-1000/SW02
PD1-02/SW01R2	PD1-03/SW01

Surface Water in Pond 2 Data Set
PD2-01/SW01
PD2-02/SW01

Surface Water in Pond 3 Data Set
PD3-01/SW01
PD3-1000/SW01
PD3-02/SW01

Surface Water in Mid-Site Ravine Data Set
MSR-01/SW02
MSR-02/SW02
MSR-1000/SW02
MSR-03/SW02

Surface Water in Pond 4 Data Set
PD4-01/SW02

Surface Water in Pond 5 Data Set
PD5-01/SW02

Surface Water in On-site Cistern Data Set
CST-01/SW01

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Surface Water in Ditches Along Rail Tracks Data Set			
OFF-01/SW02	OFF-04/SW01	OFF-10/SW02	OFF-18/SW01
OFF-02/SW01	OFF-04/SW01R1	OFF-16/SW01	OFF-19/SW01
OFF-03/SW01	OFF-04/SW01R2	OFF-17/SW01	

Surface Water in Ditches Along 169 Highway Data Set	
OFF-05/SW02	OFF-09/SW02
OFF-06/SW02	OFF-14/SW01
OFF-07/SW02	OFF-1001/SW01
OFF-08/SW02	OFF-15/SW01
OFF-09/SW01	OFF-20/SW01

Surface Water in Strip Mine Pit Data Set	
SMP-01/SW01	SMP-04/SW01
SMP-02/SW01	SMP-05/SW01
SMP-03/SW01	SMP-06/SW01
SMP-1000/SW01	

Surface Water in Farm Pond Data Set
FP-01/SW01
FP-02/SW01
FP-1000/SW01
FP-03/SW01

Surface Water in Intermittent Ditch at (b) (6)
OFF-11/SW02
OFF-12/SW02
OFF-13/SW02

Sediment in Pond 1 Data Set
PD1-01/SD01
PD1-02/SD01
PD1-02/SD01Rep1
PD1-02/SD01Rep2
PD1-03/SD01

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sediment in Pond 2 Data Set			
PD2-01/SD01			
PD2-02/SD01			

Sediment in Pond 3 Data Set			
PD3-01/SD01			
PD3-1000/SD01			
PD3-02/SD01			

Sediment in Mid-Site Ravine Data Set			
MSR-01/SD01			
MSR-02/SD01			
MSR-03/SD01			

Sediment in Pond 4 Data Set			
PD4-01/SD01			

Sediment in Pond 5 Data Set			
PD5-01/SD01			

Sediment in Ditches Along Rail Tracks Data Set			
OFF-01/SD01	OFF-04/SD01	OFF-10/SD01	OFF-18/SD01
OFF-02/SD01	OFF-04/SD01Rep1	OFF-16/SD01	OFF-19/SD01
OFF-03/SD01	OFF-04/SD01Rep2	OFF-17/SD01	

Sediment in Ditches Along 169 Highway Data Set			
OFF-05/SD01	OFF-08/SD01	OFF-14/SD01	OFF-20/SD01
OFF-06/SD01	OFF-1000/SD01	OFF-1001/SD01	
OFF-07/SD01	OFF-09/SD01	OFF-15/SD01	

Sediment in Strip Mine Pit Data Set	
SMP-01/SD01	SMP-04/SD01
SMP-02/SD01	SMP-05/SD01
SMP-03/SD01	SMP-06/SD01
SMP-1000/SD01	

Table 6-2
Data Sets Used for Risk Assessment Calculations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sediment in Farm Pond Data Set
FP-01/SD01
FP-02/SD01
FP-1000/SD01
FP-03/SD01

Sediment in Intermittent Ditch at (b) (6) Data Set
OFF-11/SD01
OFF-12/SD01
OFF-13/SD01

On-Site Washed Blackberry Data Set
TFM-WBB-1
TFM-WBB-2
EC-02/BR02W
EC-02/BR03W

On-Site Unwashed Blackberry Data Set	
TFM-UBB-1 TFM-UBB-2 EC-02/BR02U EC-02/BR02U RE	EC-02/BR03U

Off-Site Washed Blackberries from (b) (6) Data Set
BM-WBB EC-01/BR02W EC-01/BR03W

Fish Tissue Data Set	
I1	I5
I2	I6
I3	I7
I4	

Table 6-3
Summary of Populations and Pathways
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Sampled Medium	Basis of Exposure Point Concentration	Exposure Route
On-Site Populations			
Resident in Waste Area (adult, child, and age-adjusted)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of On-site Waste Area data	- Incidental ingestion - Dermal contact
	Groundwater	Maximum concentration of Site-wide data	- Ingestion - Dermal contact
	Air	Maximum detected concentration of on-Site data	- Inhalation of dust
	Surface Water Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Surface Water Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Surface Water Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact
	Surface Water Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
	Sediment Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Sediment Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Sediment Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact
	Sediment Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
	On-Site Blackberries	Maximum detected concentration of on-Site washed blackberry data	-Ingestion of homegrown produce
Resident in Non-Waste Area (adult, child, and age-adjusted)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of On-site Non-Waste Area data	- Incidental ingestion - Dermal contact
	Groundwater	Maximum concentration of Site-wide data	- Ingestion - Dermal contact
	Air	Maximum detected concentration of on-Site data	- Inhalation of dust
	Surface Water Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Surface Water Pond 5	Maximum detected concentration from Pond 5	- Incidental ingestion - Dermal contact
	Sediment Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Sediment Pond 5	Maximum detected concentration from Pond 5	No COPCs identified.
Outdoor Commercial/Industrial Worker in Waste Area	Shallow Soil (0 - 2 ft bgs)	95 percent UCL on-Site Waste Area data	- Incidental ingestion - Dermal contact
	Air	Maximum concentration of on-Site data	- Inhalation of dust
	Surface Water Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Surface Water Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Surface Water Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact

Table 6-3
Summary of Populations and Pathways
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Sampled Medium	Basis of Exposure Point Concentration	Exposure Route
On-Site Populations (continued)			
Outdoor Commercial/Industrial Worker in Waste Area (continued)	Surface Water Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
	Sediment Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Sediment Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Sediment Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact
	Sediment Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
Outdoor Commercial/Industrial Worker in Non-Waste Area	Shallow Soil (0 - 2 ft bgs)	95 percent UCL on-Site Non-Waste Area data	- Incidental ingestion - Dermal contact
	Air	Maximum concentration of on-Site data	- Inhalation of dust
	Surface Water Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Surface Water Pond 5	Maximum detected concentration from Pond 5	- Incidental ingestion - Dermal contact
	Sediment Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Sediment Pond 5	Maximum detected concentration from Pond 5	No COPCs identified.
Construction/Utility Worker in Waste Area	Surface and Subsurface Soil (0-12 feet bgs)	95 percent UCL of Waste Area data	- Incidental ingestion - Dermal contact - Inhalation of dust
	Groundwater	Maximum concentration of Site-wide data	- Dermal contact with pooled water in excavation
	Surface Water Cistern	Detected concentration from Cistern	- Dermal contact
Construction/Utility Worker in Non-Waste Area	Surface and Subsurface Soil (0-12 feet bgs)	95 percent UCL of Non-Waste Area data	- Incidental ingestion - Dermal contact - Inhalation of dust
	Groundwater	Maximum concentration of Site-wide data	- Dermal contact with pooled water in excavation
Trespasser in Waste Area	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of on-Site Waste Area data	- Incidental ingestion - Dermal contact
	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of on-Site Non-Waste Area data	- Incidental ingestion - Dermal contact
	Air	Maximum concentration of on-Site data	- Inhalation of dust
	Surface Water Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Surface Water Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Surface Water Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact

Table 6-3
Summary of Populations and Pathways
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Sampled Medium	Basis of Exposure Point Concentration	Exposure Route
On-Site Populations (continued)			
Trespasser in Waste Area	Surface Water Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Surface Water Pond 5	Maximum detected concentration from Pond 5	- Incidental ingestion - Dermal contact
	Surface Water Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
	Sediment Pond 1	Maximum detected concentration from Pond 1	- Incidental ingestion - Dermal contact
	Sediment Pond 2	Maximum detected concentration from Pond 2	- Incidental ingestion - Dermal contact
	Sediment Pond 3	Maximum detected concentration from Pond 3	- Incidental ingestion - Dermal contact
	Sediment Pond 4	Maximum detected concentration from Pond 4	- Incidental ingestion - Dermal contact
	Sediment Pond 5	Maximum detected concentration from Pond 5	No COPCs identified.
	Sediment Mid-Site Ravine	Maximum detected concentration from Mid-Site Ravine	- Incidental ingestion - Dermal contact
	On-Site Blackberries	Maximum detected concentration of on-Site unwashed blackberry data	- Ingestion of wild produce
Off-Site Populations			
Trespasser along Rail Tracks	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data along rail tracks	- Incidental ingestion - Dermal contact - Inhalation of dust
	Surface Water Ditches along 169 Hwy	95 percent UCL of data from ditches along 169 Hwy	- Incidental ingestion - Dermal contact
	Sediment Ditches along 169 Hwy	95 percent UCL of data from ditches along 169 Hwy	- Incidental ingestion - Dermal contact
Recreationist at Strip Mine Pit	Surface Water Strip Mine Pit	95 percent UCL of Strip Mine Pit data	No COPCs identified.
	Sediment Strip Mine Pit	95 percent UCL of Strip Mine Pit data	- Incidental ingestion - Dermal contact
	Fish Tissue at Strip Mine Pit	95 percent UCL of Strip Mine Pit data	No COPCs identified.
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from 1123 W Maple St	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from 11321 E 126th St N	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at City Park	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from City Park	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Ernest Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at Faith Assembly Church	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Faith Assembly Church	- Incidental ingestion - Dermal contact - Inhalation of dust

Table 6-3
Summary of Populations and Pathways
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Sampled Medium	Basis of Exposure Point Concentration	Exposure Route
Off-Site Populations (continued)			
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Griffin Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Hamlin Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Higgins Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at High School	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from High School	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Keefover Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Martin Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6) (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Mcanally Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6) Property	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Barry Moore Property	- Incidental ingestion - Dermal contact - Inhalation of dust
	Off-Site Blackberries	Maximum detected concentration of washed data from Barry Moore Property	- Ingestion of homegrown produce
Resident at (b) (6) (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Bobby Moore Property	- Incidental ingestion - Dermal contact - Inhalation of dust
	Surface Water Farm Pond	Maximum detected concentration from Farm Pond	No COPCs identified.
	Sediment Farm Pond	Maximum detected concentration from Farm Pond	- Incidental ingestion - Dermal contact
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Oslin Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at Pioneer Park	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Pioneer Park	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at Rural Fire Department	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Rural Fire Department	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from 1421 W Walnut Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from 313 15th St Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Siens Property	- Incidental ingestion - Dermal contact - Inhalation of dust

Table 6-3
Summary of Populations and Pathways
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Sampled Medium	Basis of Exposure Point Concentration	Exposure Route
Off-Site Populations (continued)			
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Sills Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Smalygo Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6) (b) (6)	Shallow Soil (0 - 2 ft bgs)	95 percent UCL of data from Tate Property	- Incidental ingestion - Dermal contact - Inhalation of dust
	Surface Water in Ditches along 169	95 percent UCL of data from ditches along 169 Hwy	- Incidental ingestion - Dermal contact
	Surface Water in Intermittent Ditch	Maximum detected concentration of data from Intermittent Ditch	- Incidental ingestion - Dermal contact
	Sediment in Ditches along 169	95 percent UCL of data from ditches along 169 Hwy	- Incidental ingestion - Dermal contact
	Sediment in Intermittent Ditch	Maximum detected concentration of data from Intermittent Ditch	- Incidental ingestion - Dermal contact
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Tillman Property	- Incidental ingestion - Dermal contact - Inhalation of dust
Resident at (b) (6)	Shallow Soil (0 - 2 ft bgs)	Maximum detected concentration of data from Wood Property	- Incidental ingestion - Dermal contact - Inhalation of dust

Notes:

- Evaluation of all ponds for each on-Site population assumes that an individual will spend an equal amount of time engaged in recreational or job-related activities in each pond.
- Outdoor worker is landscape/groundskeeper/maintenance scenario that could involve work around the ponds.
- Landscaping/groundskeeping/maintenance activities would not be conducted along Strip Mine Pit.
- Groundwater is shallow enough for direct contact during construction or utility repair.
- On-Site trespassers are assumed to spend of all their time in the waste area.
- Since off-Site properties are not subject to land-use controls, all off-Site properties are evaluated for potential residential exposures.

COPC - chemical of potential concern

ft - feet

bgs - below ground surface

Table 6-4
Summary of Exposure Point Concentrations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

		Arsenic	Cadmium	Lead	Zinc
On-Site Waste Area	Units				
Shallow Soil (0-2 ft bgs)	mg/kg	4.87E+02	2.92E+02	1.93E+04	5.40E+04
Comprehensive Soil	mg/kg	5.78E+02	3.27E+02	2.37E+04	6.88E+04
Groundwater	ug/L	1.70E+01	1.78E+02	9.46E+02	--
Air	ug/m ³	3.00E-03	--	7.00E-03	--
Surface Water in Pond 1	ug/L	--	3.70E+01	5.60E+01	1.68E+03
Surface Water in Pond 2	ug/L	--	2.20E+01	7.50E+01	7.81E+02
Surface Water in Pond 3	ug/L	--	--	3.00E+01	3.75E+02
Surface Water in Mid-Site Ravine	ug/L	--	1.84E+02	2.00E+01	8.25E+03
Surface Water in On-Site Cistern	ug/L	--	--	--	2.60E+02
Sediment in Pond 1	mg/kg	1.95E+02	1.40E+03	2.74E+03	4.47E+04
Sediment in Pond 2	mg/kg	8.40E+01	3.30E+02	1.20E+03	--
Sediment in Pond 3	mg/kg	6.80E+01	2.20E+02	1.06E+03	--
Sediment in Mid-Site Ravine	mg/kg	5.88E+02	7.02E+02	8.15E+03	3.47E+04
Washed Produce	mg/kg	1.10E-01	--	6.70E+00	6.90E+00
Unwashed Produce	mg/kg	3.90E-01	1.40E-01	3.29E+01	3.09E+01
On-Site Non-Waste Area					
Shallow Soil (0-2 ft bgs)	mg/kg	7.78E+01	9.67E+01	1.03E+03	4.23E+03
Comprehensive Soil	mg/kg	5.66E+01	7.00E+01	7.38E+02	--
Groundwater	ug/L	1.70E+01	1.78E+02	9.46E+02	--
Air	ug/m ³	3.00E-03	--	7.00E-03	--
Surface Water in Pond 4	ug/L	--	1.60E+01	--	1.08E+03
Surface Water in Pond 5	ug/L	--	--	--	2.61E+02
Sediment in Pond 4	mg/kg	5.70E+01	1.21E+02	9.75E+02	--
Off-Site Media					
Shallow Soil at Highway 169 Drainage Ditches	mg/kg	2.58E+02	1.92E+02	1.00E+04	2.95E+04
Surface Water at Highway 169 Drainage Ditches	ug/L	--	1.76E+01	2.03E+01	7.42E+02
Sediment at Highway 169 Drainage Ditches	mg/kg	1.78E+02	7.40E+02	2.59E+03	1.35E+04
Sediment in Strip Mine Pit	mg/kg	3.11E+01	4.27E+01	4.01E+02	--
Off-Site Properties					
(b) (6)	mg/kg	7.02E+01	--	8.79E+02	--
(b) (6)	mg/kg	1.09E+01	--	--	--
City Park	mg/kg	1.40E+01	--	--	--
(b) (6)	mg/kg	1.70E+01	--	--	--
Faith Assembly Church	mg/kg	2.84E+01	--	3.14E+02	--
(b) (6)	mg/kg	1.00E+01	--	--	--
(b) (6)	mg/kg	5.38E+02	3.25E+01	8.95E+03	2.53E+04
(b) (6)	mg/kg	3.04E+01	--	5.70E+02	--
High School Property	mg/kg	9.00E+00	--	--	--
(b) (6)	mg/kg	1.40E+01	--	--	--
(b) (6)	mg/kg	1.45E+02	--	1.57E+03	--
(b) (6)	mg/kg	1.70E+01	--	--	--
(b) (6)					
Shallow Soil (0-2 ft bgs)	mg/kg	1.19E+02	1.05E+02	6.77E+02	--
Washed Produce	mg/kg	--	--	--	3.90E+00

Table 6-4
Summary of Exposure Point Concentrations
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

		Arsenic	Cadmium	Lead	Zinc
Off-Site Properties (continued)					
(b) (6)					
Shallow Soil (0-2 ft bgs)	mg/kg	6.93E+01	--	4.30E+02	--
Sediment in Farm Pond	mg/kg	1.00E+01	--	--	--
(b) (6)	mg/kg	2.00E+01	--	--	--
Pioneer Park	mg/kg	2.10E+01	--	--	--
Rural Fire Department Property	mg/kg	2.70E+01	--	--	--
(b) (6)	mg/kg	1.30E+01	--	--	--
(b) (6)	mg/kg	4.25E+01	--	5.26E+02	--
(b) (6)	mg/kg	2.10E+01	--	--	--
(b) (6)	mg/kg	1.20E+01	--	--	--
(b) (6)	mg/kg	3.18E+01	--	3.01E+02	--
(b) (6)					
Shallow Soil (0-2 ft bgs)	mg/kg	5.20E+01	--	7.89E+02	--
Surface Water at Highway 169 Ditch	ug/L	--	3.79E+02	2.06E+03	2.32E+04
Surface Water at Intermittent Ditch	ug/L	--	--	--	8.49E+02
Sediment at Highway 169 Ditch	mg/kg	2.71E+02	6.75E+02	3.04E+03	--
Sediment in Intermittent Ditch	mg/kg	1.60E+01	--	--	--
(b) (6)	mg/kg	1.70E+01	--	--	--
(b) (6)	mg/kg	1.10E+01	--	--	--

Notes:

For additional information, see Tables 2.1 thru 2.84 in Appendix N.

"--" - Chemical not retained as a COPC.

Table 6-5
Summary of Non-Cancer Toxicity Data

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Chemical of Potential Concern	Oral RfD		Absorbed RfD for Dermal		Inhalation RfD	
	Value	Units	Value	Units	Value	Units
Arsenic	3E-04	mg/kg/day	3E-04	mg/kg/day	NA	NA
Cadmium (food)	1E-03	mg/kg/day	3E-05	mg/kg/day	NA	NA
Cadmium (water)	5E-04	mg/kg/day	3E-05	mg/kg/day	NA	NA
Lead	NA	NA	NA	NA	NA	NA
Zinc	3E-01	mg/kg/day	3E-01	mg/kg/day	NA	NA

Notes:

mg/kg/day - milligrams per kilogram per day

NA - Not applicable

For additional information see Tables 5-1 to 5-3 in Appendix N

Table 6-6
Summary of Cancer Toxicity Data

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Chemical of Potential Concern	Oral Cancer Slope Factor		Absorbed Cancer Slope Factor for Dermal		Inhalation Cancer Slope Factor	
	Value	Units	Value	Units	Value	Units
Arsenic	1.5E+00	1/mg/kg/day	1.5E+00	1/mg/kg/day	1.5E+01	1/mg/kg/day
Cadmium (food)	NA	NA	NA	NA	6.3E+00	1/mg/kg/day
Cadmium (water)	NA	NA	NA	NA	6.3E+00	1/mg/kg/day
Lead	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA

Notes:

mg/kg/day - milligrams per kilogram per day

NA - Not applicable

For additional information see Tables 6-1 to 6-4 in Appendix N

Table 6-7
Summary of Risk Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Population	Noncancer	Cancer
Future Waste Area Adult Resident Scenario		
Ingestion of Shallow Soil	3E+00	
Dermal Contact with Shallow Soil	3E-01	
Ingestion of Washed Produce	3E-02	
Inhalation of Air	0E+00	
Incidental Ingestion of Groundwater	1E+01	
Dermal Contact with Groundwater	1E+00	
Ingestion of Surface Water in Pond 1	1E-02	
Dermal Contact with Surface Water in Pond 1	8E-02	
Ingestion of Surface Water in Pond 2	7E-03	
Dermal Contact with Surface Water in Pond 2	4E-02	
Ingestion of Surface Water in Pond 3	2E-04	
Dermal Contact with Surface Water in Pond 3	4E-05	
Ingestion of Surface Water in Mid-Site Ravine	6E-02	
Dermal Contact with Surface Water in Mid-Site Ravine	4E-01	
Ingestion of Sediment in Pond 1	2E-01	
Dermal Contact with Sediment in Pond 1	9E-02	
Ingestion of Sediment in Pond 2	4E-02	
Dermal Contact with Sediment in Pond 2	3E-02	
Ingestion of Sediment in Pond 3	3E-02	
Dermal Contact with Sediment in Pond 3	2E-02	
Ingestion of Sediment in Mid-Site Ravine	2E-01	
Dermal Contact with Sediment in Mid-Site Ravine	1E-01	
Total	2E+01	
Future Waste Area Child Resident Scenario		
Ingestion of Shallow Soil	3E+01	
Dermal Contact with Shallow Soil	2E+00	
Ingestion of Washed Produce	4E-02	
Inhalation of Air	0E+00	
Incidental Ingestion of Groundwater	3E+01	
Dermal Contact with Groundwater	3E+00	
Ingestion of Surface Water in Pond 1	5E-02	
Dermal Contact with Surface Water in Pond 1	1E-01	
Ingestion of Surface Water in Pond 2	3E-02	
Dermal Contact with Surface Water in Pond 2	8E-02	
Ingestion of Surface Water in Pond 3	8E-04	
Dermal Contact with Surface Water in Pond 3	7E-05	
Ingestion of Surface Water in Mid-Site Ravine	3E-01	
Dermal Contact with Surface Water in Mid-Site Ravine	6E-01	
Ingestion of Sediment in Pond 1	1E+00	
Dermal Contact with Sediment in Pond 1	2E+00	
Ingestion of Sediment in Pond 2	4E-01	
Dermal Contact with Sediment in Pond 2	7E-01	
Ingestion of Sediment in Pond 3	3E-01	
Dermal Contact with Sediment in Pond 3	5E-01	
Ingestion of Sediment in Mid-Site Ravine	2E+00	
Dermal Contact with Sediment in Mid-Site Ravine	3E+00	
Total	7E+01	

Table 6-7
Summary of Risk Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Population	Noncancer	Cancer
Future Waste Area Resident Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Ingestion of Washed Produce Inhalation of Air Incidental Ingestion of Groundwater Dermal Contact with Groundwater Ingestion of Surface Water in Pond 1 Dermal Contact with Surface Water in Pond 1 Ingestion of Surface Water in Pond 2 Dermal Contact with Surface Water in Pond 2 Ingestion of Surface Water in Mid-Site Ravine Dermal Contact with Surface Water in Mid-Site Ravine Ingestion of Sediment in Pond 1 Dermal Contact with Sediment in Pond 1 Ingestion of Sediment in Pond 2 Dermal Contact with Sediment in Pond 2 Ingestion of Sediment in Pond 3 Dermal Contact with Sediment in Pond 3 Ingestion of Sediment in Mid-Site Ravine Dermal Contact with Sediment in Mid-Site Ravine Total		1E-03 1E-04 5E-06 5E-06 4E-04 2E-06 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00 2E-05 3E-05 1E-05 1E-05 8E-06 9E-06 7E-05 8E-05 2E-03
Future Non-Waste Area Adult Resident Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Air Incidental Ingestion of Groundwater Dermal Contact with Groundwater Ingestion of Surface Water in Pond 4 Dermal Contact with Surface Water in Pond 4 Ingestion of Surface Water in Pond 5 Dermal Contact with Surface Water in Pond 5 Ingestion of Sediment in Pond 4 Dermal Contact with Sediment in Pond 4 Total	5E-01 6E-02 0E+00 1E+01 1E+00 1E-02 7E-02 2E-04 5E-05 4E-02 3E-02 1E+01	
Future Non-Waste Area Child Resident Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Air Incidental Ingestion of Groundwater Dermal Contact with Groundwater Ingestion of Surface Water in Pond 4 Dermal Contact with Surface Water in Pond 4 Ingestion of Surface Water in Pond 5 Dermal Contact with Surface Water in Pond 5 Ingestion of Sediment in Pond 4 Dermal Contact with Sediment in Pond 4 Total	5E+00 4E-01 0E+00 3E+01 3E+00 5E-02 1E-01 1E-03 9E-05 4E-01 6E-01 4E+01	

Table 6-7
Summary of Risk Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Population	Noncancer	Cancer
Future Non-Waste Area Resident Scenario		
Ingestion of Shallow Soil		2E-04
Dermal Contact with Shallow Soil		2E-05
Inhalation of Air		5E-06
Incidental Ingestion of Groundwater		4E-04
Dermal Contact with Groundwater		2E-06
Ingestion of Surface Water in Pond 4		0E+00
Dermal Contact with Surface Water in Pond 4		0E+00
Ingestion of Sediment in Pond 4		1E-05
Dermal Contact with Sediment in Pond 4		2E-05
Total		6E-04
Future Waste Area Outdoor Commercial/Industrial Worker Scenario		
Ingestion of Shallow Soil	1E+00	1E-04
Dermal Contact with Shallow Soil	2E-01	3E-05
Inhalation of Air	0E+00	8E-07
Ingestion of Surface Water in Pond 1	2E-03	0E+00
Dermal Contact with Surface Water in Pond 1	1E-02	0E+00
Ingestion of Surface Water in Pond 2	1E-03	0E+00
Dermal Contact with Surface Water in Pond 2	7E-03	0E+00
Ingestion of Surface Water in Pond 3	3E-05	NA
Dermal Contact with Surface Water in Pond 3	6E-06	NA
Ingestion of Surface Water in Mid-Site Ravine	9E-03	0E+00
Dermal Contact with Surface Water in Mid-Site Ravine	6E-02	0E+00
Ingestion of Sediment in Pond 1	2E-01	1E-05
Dermal Contact with Sediment in Pond 1	2E-01	9E-06
Ingestion of Sediment in Pond 2	6E-02	5E-06
Dermal Contact with Sediment in Pond 2	7E-02	4E-06
Ingestion of Sediment in Pond 3	5E-02	4E-06
Dermal Contact with Sediment in Pond 3	5E-02	3E-06
Ingestion of Sediment in Mid-Site Ravine	3E-01	3E-05
Dermal Contact with Sediment in Mid-Site Ravine	3E-01	3E-05
Total	3E+00	3E-04
Future Non-Waste Area Outdoor Commercial/Industrial Worker Scenario		
Ingestion of Shallow Soil	4E-01	4E-05
Dermal Contact with Shallow Soil	8E-02	8E-06
Inhalation of Air	0E+00	8E-07
Ingestion of Surface Water in Pond 4	8E-04	0E+00
Dermal Contact with Surface Water in Pond 4	5E-03	0E+00
Ingestion of Surface Water in Pond 5	2E-05	NA
Dermal Contact with Surface Water in Pond 5	4E-06	NA
Ingestion of Sediment in Pond 4	3E-02	3E-06
Dermal Contact with Sediment in Pond 4	3E-02	3E-06
Total	5E-01	6E-05

Table 6-7
Summary of Risk Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Population	Noncancer	Cancer
Future Waste Area Construction/Utility Worker Scenario		
Ingestion of Surface and Subsurface Soil	8E+00	2E-05
Dermal Contact with Surface and Subsurface Soil	7E-01	2E-06
Inhalation of Air	0E+00	1E-06
Dermal Contact with Pooled Water in an Excavation	3E-01	4E-05
Dermal Contact with Surface Water in On-Site Cistern	5E-06	NA
Total	9E+00	6E-05
Future Non-Waste Area Construction/Utility Worker Scenario		
Ingestion of Surface and Subsurface Soil	9E-01	2E-06
Dermal Contact with Surface and Subsurface Soil	9E-02	2E-07
Inhalation of Air	0E+00	1E-07
Dermal Contact with Pooled Water in an Excavation	3E-01	4E-05
Total	1E+00	4E-05
Future Waste Area Trespasser Scenario		
Ingestion of Shallow Soil	9E-01	3E-05
Dermal Contact with Shallow Soil	4E-01	1E-05
Ingestion of Unwashed Produce	2E-02	7E-07
Inhalation of Air	0E+00	1E-07
Ingestion of Surface Water in Pond 1	2E-02	0E+00
Dermal Contact with Surface Water in Pond 1	8E-02	0E+00
Ingestion of Surface Water in Pond 2	1E-02	0E+00
Dermal Contact with Surface Water in Pond 2	5E-02	0E+00
Ingestion of Surface Water in Pond 3	3E-04	0E+00
Dermal Contact with Surface Water in Pond 3	4E-05	0E+00
Ingestion of Surface Water in Mid-Site Ravine	9E-02	0E+00
Dermal Contact with Surface Water in Mid-Site Ravine	4E-01	0E+00
Ingestion of Sediment in Pond 1	2E-01	3E-06
Dermal Contact with Sediment in Pond 1	2E+00	2E-05
Ingestion of Sediment in Pond 2	7E-02	1E-06
Dermal Contact with Sediment in Pond 2	5E-01	8E-06
Ingestion of Sediment in Pond 3	5E-02	9E-07
Dermal Contact with Sediment in Pond 3	4E-01	7E-06
Ingestion of Sediment in Mid-Site Ravine	3E-01	8E-06
Dermal Contact with Sediment in Mid-Site Ravine	2E+00	6E-05
Total	8E+00	1E-04
Current/Future Off-Site Trespasser Scenario		
Ingestion of Shallow Soil	5E-01	1E-05
Dermal Contact with Shallow Soil	2E-01	6E-06
Inhalation of Air	0E+00	1E-08
Ingestion of Surface Water in Ditches along Rail Tracks	3E-02	0E+00
Dermal Contact with Surface Water in Ditches along Rail Tracks	2E-01	0E+00
Ingestion of Sediment in Ditches along Rail Tracks	6E-01	1E-05
Dermal Contact with Sediment in Ditches along Rail Tracks	5E+00	7E-05
Total	6E+00	1E-04

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current/Future Off-Site Recreationist Scenario Ingestion of Sediment from Strip Mine Pit Dermal Contact with Sediment from Strip Mine Pit Total	4E-02 2E-02 6E-02	5E-06 2E-06 7E-06
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	3E-01 4E-02 0E+00 4E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	3E+00 3E-01 0E+00 3E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		2E-04 2E-05 9E-08 2E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-02 6E-03 0E+00 6E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-01 4E-02 0E+00 5E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 2E-06 1E-08 3E-05
Future Adult Resident at City Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-02 8E-03 0E+00 7E-02	
Future Child Resident at City Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-01 5E-02 0E+00 6E-01	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Future Resident at City Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 3E-06 2E-08 4E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	8E-02 9E-03 0E+00 9E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	7E-01 6E-02 0E+00 8E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		4E-05 4E-06 2E-08 4E-05
Current Adult Resident at Faith Assembly Church Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 2E-02 0E+00 1E-01	
Current Child Resident at Faith Assembly Church Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E+00 1E-01 0E+00 1E+00	
Current Resident at Faith Assembly Church Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		7E-05 6E-06 3E-08 7E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-02 5E-03 0E+00 5E-02	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	4E-01 4E-02 0E+00 5E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		2E-05 2E-06 1E-08 3E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	3E+00 3E-01 0E+00 3E+00	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	2E+01 2E+00 0E+00 3E+01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		1E-03 1E-04 7E-07 1E-03
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 2E-02 0E+00 2E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E+00 1E-01 0E+00 1E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		7E-05 7E-06 4E-08 8E-05

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Future Adult Resident at High School Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	4E-02 5E-03 0E+00 5E-02	
Future Child Resident at High School Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	4E-01 3E-02 0E+00 4E-01	
Future Resident at High School Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		2E-05 2E-06 1E-08 2E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-02 8E-03 0E+00 7E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-01 5E-02 0E+00 6E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 3E-06 2E-08 4E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	7E-01 8E-02 0E+00 7E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E+00 5E-01 0E+00 7E+00	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-04 3E-05 2E-07 4E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	8E-02 9E-03 0E+00 9E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	7E-01 6E-02 0E+00 8E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		4E-05 4E-06 2E-08 4E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Ingestion of Washed Produce Inhalation of Dust Total	7E-01 9E-02 9E-04 0E+00 8E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Ingestion of Washed Produce Inhalation of Dust Total	6E+00 6E-01 1E-03 0E+00 7E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Ingestion of Washed Produce Inhalation of Dust Total		3E-04 3E-05 NA 2E-07 3E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Sediment from Farm Pond Dermal Contact with Sediment from Farm Pond Total	3E-01 4E-02 0E+00 9E-03 5E-03 4E-01	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Sediment from Farm Pond Dermal Contact with Sediment from Farm Pond Total	3E+00 2E-01 0E+00 9E-02 1E-01 3E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Sediment from Farm Pond Dermal Contact with Sediment from Farm Pond Total		2E-04 2E-05 8E-08 5E-06 5E-06 2E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	9E-02 1E-02 0E+00 1E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	9E-01 7E-02 0E+00 9E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		5E-05 4E-06 2E-08 5E-05
Future Adult Resident at Pioneer Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 1E-02 0E+00 1E-01	
Future Child Resident at Pioneer Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	9E-01 8E-02 0E+00 1E+00	
Future Resident at Pioneer Park Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		5E-05 5E-06 3E-08 5E-05

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Adult Resident at Rural Fire Department Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 1E-02 0E+00 1E-01	
Current Child Resident at Rural Fire Department Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E+00 1E-01 0E+00 1E+00	
Current Resident at Rural Fire Department Property Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		6E-05 6E-06 3E-08 7E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-02 7E-03 0E+00 7E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	6E-01 5E-02 0E+00 6E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 3E-06 2E-08 3E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	2E-01 2E-02 0E+00 2E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	2E+00 2E-01 0E+00 2E+00	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		1E-04 9E-06 5E-08 1E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 1E-02 0E+00 1E-01	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	9E-01 8E-02 0E+00 1E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		5E-05 5E-06 3E-08 5E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-02 7E-03 0E+00 6E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-01 4E-02 0E+00 6E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 3E-06 1E-08 3E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E-01 2E-02 0E+00 2E-01	

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Child (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	1E+00 1E-01 0E+00 1E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		7E-05 7E-06 4E-08 8E-05
Current Adult (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Surface Water in Ditches along Highway 169 Dermal Contact with Surface Water in Ditches along Highway 169 Ingestion of Surface Water in Intermittent Ditch Dermal Contact with Surface Water in Intermittent Ditch Ingestion of Sediment in Ditches along Highway 169 Dermal Contact with Sediment in Ditches along Highway 169 Ingestion of Sediment in Intermittent Ditch Dermal Contact with Sediment in Intermittent Ditch Total	2E-01 3E-02 0E+00 2E-01 5E-01 8E-04 5E-05 2E-01 1E-01 8E-03 1E+00 1E+00	
Current Child (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Surface Water in Ditches along Highway 169 Dermal Contact with Surface Water in Ditches along Highway 169 Ingestion of Surface Water in Intermittent Ditch Dermal Contact with Surface Water in Intermittent Ditch Ingestion of Sediment in Ditches along Highway 169 Dermal Contact with Sediment in Ditches along Highway 169 Ingestion of Sediment in Intermittent Ditch Dermal Contact with Sediment in Intermittent Ditch Total	2E+00 2E-01 0E+00 1E+00 1E+00 4E-03 1E-04 2E+00 3E+00 7E-02 1E-01 1E+01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Ingestion of Surface Water in Ditches along Highway 169 Dermal Contact with Surface Water in Ditches along Highway 169 Ingestion of Sediment in Ditches along Highway 169 Dermal Contact with Sediment in Ditches along Highway 169 Ingestion of Sediment in Intermittent Ditch Dermal Contact with Sediment in Intermittent Ditch Total		1E-04 1E-05 6E-08 0E+00 0E+00 7E-05 7E-05 4E-06 4E-06 3E-04

Table 6-7
Summary of Risk Results
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	8E-02 9E-03 0E+00 9E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	7E-01 6E-02 0E+00 8E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		4E-05 4E-06 2E-08 4E-05
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-02 6E-03 0E+00 6E-02	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total	5E-01 4E-02 0E+00 5E-01	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Inhalation of Dust Total		3E-05 2E-06 1E-08 3E-05

Notes:

NA - Not applicable

Table 6-8
Summary of Pathway Specific Risk Exceedances
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Future Waste Area Adult Resident Scenario Ingestion of Shallow Soil Incidental Ingestion of Groundwater	3E+00 1E+01	
Future Waste Area Child Resident Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil Incidental Ingestion of Groundwater Dermal Contact with Groundwater Dermal Contact with Sediment in Pond 1 Ingestion of Sediment in Mid-Site Ravine Dermal Contact with Sediment in Mid-Site Ravine	3E+01 2E+00 3E+01 3E+00 2E+00 2E+00 3E+00	
Future Waste Area Resident Scenario Ingestion of Shallow Soil Incidental Ingestion of Groundwater		1E-03 4E-04
Future Non-Waste Area Adult Resident Scenario Incidental Ingestion of Groundwater	1E+01	
Future Non-Waste Area Child Resident Scenario Ingestion of Shallow Soil Incidental Ingestion of Groundwater Dermal Contact with Groundwater	5E+00 3E+01 3E+00	
Future Non-Waste Area Resident Scenario Ingestion of Shallow Soil Incidental Ingestion of Groundwater		2E-04 4E-04
Future Waste Area Construction/Utility Worker Scenario Ingestion of Surface and Subsurface Soil	8E+00	
Future Waste Area Trespasser Scenario Dermal Contact with Sediment in Pond 1 Dermal Contact with Sediment in Mid-Site Ravine	2E+00 2E+00	
Current/Future Off-Site Trespasser Scenario Dermal Contact with Sediment in Ditches along Rail Tracks	5E+00	

Table 6-8
Summary of Pathway Specific Risk Exceedances
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Population	Noncancer	Cancer
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil	3E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil		2E-04
Current Adult Resident at (b) (6) Scenario Ingestion of Shallow Soil	3E+00	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Dermal Contact with Shallow Soil	2E+01 2E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil		1E-03
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil	6E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil		3E-04
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil	6E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil		3E-04
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil	3E+00	
Current Resident at (b) (6) Scenario Ingestion of Shallow Soil		2E-04
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil	2E+00	
Current Child Resident at (b) (6) Scenario Ingestion of Shallow Soil Ingestion of Sediment in Ditches along Highway 169 Dermal Contact with Sediment in Ditches along Highway 169	2E+00 2E+00 3E+00	

Table 7-1
Body Mass and Food, Water, and Soil or Sediment Consumption
Rates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Representative Wildlife Species	Body Mass (kg) ^a	Food Intake (kg/day) ^a	Water Intake (L/day) ^a	Estimated Soil or Sediment Intake (kg/day) ^b
Short-tailed Shrew	1.50E-02	9.00E-03	3.30E-03	1.17E-03
White-footed Mouse	2.20E-02	3.40E-03	6.60E-03	6.80E-05
Meadow Vole	4.40E-02	5.00E-03	6.00E-03	1.20E-04 ^c
Cottontail Rabbit	1.20E+00	2.37E-01	1.16E-01	1.49E-02 ^c
Red Fox	4.50E+00	4.50E-01	3.80E-01	1.26E-02
Raccoon	4.50E+00 ^d	2.37E-01 ^e	3.83E-01 ^f	2.22E-02 ^g
White-tailed Deer	5.65E+01	1.74E+00	3.70E+00	3.50E-02
American Robin	7.70E-02	9.30E-02	1.06E-02	8.74E-03 ^h
Great Blue Heron	2.39E+00	4.20E-01	1.16E-01	4.00E-02
Mallard Duck	1.00E+00	1.00E-01	7.89E-02	2.00E-03
Belted Kingfisher	1.48E-01	7.50E-02	1.60E-02	0.00E+00
Red-tailed Hawk	1.13E+00	1.09E-01	6.40E-02	3.05E-03 ⁱ
<p>Notes:</p> <p>^aBased on reported body weights and food and water consumption rates for selected avian and mammalian wildlife species from ORNL (1996a) unless noted otherwise</p> <p>^bBased on reported soil ingestion rates from Efroymson et al. (1997a) unless noted otherwise</p> <p>^cEstimated fraction of soil or sediment in diet as reported in USEPA (1993b) -- The fraction of soil in diet for the jackrabbit was substituted for the cottontail rabbit</p> <p>^d Minimum adult body mass reported in Mammals of Oklahoma (Caire et. al., 1989)</p> <p>^e Based on Food Intake (Kg/day) = 0.0687(Body Mass in Kilograms)^{0.822} (ORNL 1996a and USEPA 1993b -- Wildlife Exposure Factors Handbook)</p> <p>^f Based on Water Intake (L/day) = 0.099(Body Mass in Kilograms)^{0.90} (ORNL 1996a and USEPA 1993b -- Wildlife Exposure Factors Handbook)</p> <p>^g Assumes 9.4% of diet is sediment or soil as reported in USEPA Wildlife Exposure Factors Handbook (1993b).</p> <p>^h Food Ingestion Rate x Percent of Soil in Diet (9.4) as reported in Beyer et al. (1994)</p> <p>ⁱ Percent of soils comprising diet (2.8%) is assumed to be the same as for the Red Fox.</p> <p>The Short-tailed Shrew was selected as a surrogate for Insectivorous Reptiles and Toads.</p> <p>The Meadow Vole was selected as a surrogate for the Prairie Vole and Box Turtle.</p> <p>The Mallard Duck and Belted Kingfisher were selected as surrogates for Painted Turtles.</p> <p>kg - kilograms</p> <p>L - liter</p>				

Table 7-2
Assumed Percent Composition of Diet for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Representative Wildlife Species	Benthic Invertebrates	Aquatic Invertebrates	Soil Invertebrates (Earthworms)	Aquatic Plants	Terrestrial Plants	Fish	Small Mammal	Representing Cast
Short-tailed Shrew	0%	0%	100%	0%	0%	0%	0%	Insectivore
White-footed Mouse	0%	0%	0%	0%	100%	0%	0%	Herbivore
Meadow Vole	0%	0%	50%	0%	50%	0%	0%	Omnivore
Cottontail Rabbit	0%	0%	0%	0%	100%	0%	0%	Herbivore
Red Fox	0%	0%	0%	0%	0%	0%	100%	Carnivore
Raccoon	20%	0%	20%	0%	20%	20%	20%	Omnivore
White-tailed Deer	0%	0%	0%	0%	100%	0%	0%	Herbivore
American Robin	0%	0%	80%	0%	20%	0%	0%	Omnivore
Great Blue Heron	0%	0%	0%	0%	0%	100%	0%	Piscivore
Mallard Duck	80%	10%	0%	10%	0%	0%	0%	Omnivore
Belted Kingfisher	0%	0%	0%	0%	0%	100%	0%	Piscivore
Red-tailed Hawk	0%	0%	0%	0%	0%	0%	100%	Carnivore

Table 7-3
Home Range and Percent of Home Range Within Areas Evaluated for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Representative Wildlife Species	Home Range (acres) ^a	Percent of Home Range Within the 25 Acre On-Site Waste Area	Percent of Home Range Within the 35.7 Acre On-Site Non-Waste Area	Percent of Home Range Within the Off-Site Area	Percent of Home Range Within the Background Area
Short-tailed Shrew	0.05	100	100	100	100
White-footed Mouse	0.05	100	100	100	100
Meadow Vole	0.05	100	100	100	100
Cottontail Rabbit	1	100	100	100	100
Red Fox	150	16.7	23.8	59.5	100
Raccoon	480	5.2	7.4	87.4	100
White-tailed Deer	320	7.8	11.2	81	100
American Robin	2	100	100	100	100
Great Blue Heron	1.5	100	0 ^b	100	100
Mallard Duck	93.9	100	100	100	100
Belted Kingfisher	160	100	0 ^b	100	100
Red-tailed Hawk	940	2.7	3.8	93.5	100
Notes:					
^a Based on most conservative estimates of home range sizes as reported in Schwartz and Schwartz (1981) and USEPA (1993b).					
^b It was assumed that the great blue heron and the belted kingfisher did not occupy the on-site non-waste area because none of the ponds within the on-site non-waste area contained fish.					

Table 7-4
Screening for Earthworms Based on Soils from the On-Site, Off-Site, and
Background Areas

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Earthworm Screening Benchmark (mg/kg)	Hazard Quotient	Chemical of Potential Ecological Concern
On-Site Waste Area Soils 0-0.5 ft bgs				
Arsenic	1.17E+03	60 ^b	1.95E+01	Yes
Cadmium	1.62E+03	140 ^a	1.16E+01	Yes
Lead	7.17E+04	1700 ^a	4.22E+01	Yes
Zinc	1.65E+05	200 ^b	8.25E+02	Yes
		EHI	8.98E+02	
On-Site Non-Waste Area Soils 0-0.5 ft bgs				
Arsenic	4.16E+02	60 ^b	6.93E+00	Yes
Cadmium	7.99E+02	140 ^a	5.71E+00	Yes
Lead	5.17E+03	1700 ^a	3.04E+00	Yes
Zinc	4.14E+04	200 ^b	2.07E+02	Yes
		EHI	2.23E+02	
Off-Site Area (ODOT Property) Soils 0-0.25 ft bgs				
Arsenic	6.50E+02	60 ^b	1.08E+01	Yes
Cadmium	1.93E+02	140 ^a	1.38E+00	Yes
Lead	1.59E+04	1700 ^a	9.35E+00	Yes
Zinc	4.25E+04	200 ^b	2.13E+02	Yes
		EHI	2.34E+02	
Background 0 - 0.5 ft bgs				
Arsenic	1.60E+01	60 ^b	2.67E-01	HQ<1
Cadmium ^c	5.00E+00	140 ^a	3.57E-02	HQ<1
Lead	2.86E+01	1700 ^a	1.68E-02	HQ<1
Zinc	1.96E+02	200 ^b	9.80E-01	HQ<1
		EHI	1.30E+00	
Notes: mg/kg - milligrams per kilogram ^a USEPA, 2004 ^b Efroymsen et al, 1997b ES/ER/TM-126/R2 ^c Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-5
Pond and Surface Water Sediment Screening for Benthic Invertebrates
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Sediment (mg/kg)	EPA Region IV and OSWER Sediment Screening Values ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Pond 1				
Arsenic	1.95E+02	7.24E+00	2.69E+01	Yes
Cadmium	1.40E+03	1.00E+00	1.40E+03	Yes
Lead	2.74E+03	3.02E+01	9.07E+01	Yes
Zinc	4.47E+04	1.24E+02	3.60E+02	Yes
		EHI	1.88E+03	
Pond 2				
Arsenic	8.40E+01	7.24E+00	1.16E+01	Yes
Cadmium	3.30E+02	1.00E+00	3.30E+02	Yes
Lead	1.20E+03	3.02E+01	3.97E+01	Yes
Zinc	9.59E+03	1.24E+02	7.73E+01	Yes
		EHI	4.59E+02	
Pond 3				
Arsenic	6.80E+01	7.24E+00	9.39E+00	Yes
Cadmium	2.20E+02	1.00E+00	2.20E+02	Yes
Lead	1.06E+03	3.02E+01	3.51E+01	Yes
Zinc	9.70E+03	1.24E+02	7.82E+01	Yes
		EHI	3.43E+02	
Pond 4				
Arsenic	5.70E+01	7.24E+00	7.87E+00	Yes
Cadmium	1.21E+02	1.00E+00	1.21E+02	Yes
Lead	9.75E+02	3.02E+01	3.23E+01	Yes
Zinc	7.14E+03	1.24E+02	5.76E+01	Yes
		EHI	2.19E+02	
Pond 5				
Arsenic ^c	5.00E+00	7.24E+00	6.91E-01	HQ<1
Cadmium ^c	5.00E+00	1.00E+00	5.00E+00	Yes
Lead	2.39E+02	3.02E+01	7.91E+00	Yes
Zinc	8.08E+02	1.24E+02	6.52E+00	Yes
		EHI	2.01E+01	
Mid-Site Ravine				
Arsenic	5.88E+02	7.24E+00	8.12E+01	Yes
Cadmium	7.02E+02	1.00E+00	7.02E+02	Yes
Lead	8.15E+03	3.02E+01	2.70E+02	Yes
Zinc	3.47E+04	1.24E+02	2.80E+02	Yes
		EHI	1.33E+03	
Strip Mine Pit				
Arsenic	3.20E+01	7.24E+00	4.42E+00	Yes
Cadmium	4.90E+01	1.00E+00	4.90E+01	Yes
Lead	4.25E+02	3.02E+01	1.41E+01	Yes
Zinc	3.50E+03	1.24E+02	2.82E+01	Yes
		EHI	9.57E+01	
Farm Pond				
Arsenic	1.00E+01	7.24E+00	1.38E+00	Yes
Cadmium	2.00E+00	1.00E+00	2.00E+00	Yes
Lead	1.42E+02	3.02E+01	4.70E+00	Yes
Zinc	6.08E+02	1.24E+02	4.90E+00	Yes
		EHI	1.30E+01	

Table 7-5
Pond and Surface Water Sediment Screening for Benthic Invertebrates
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Sediment (mg/kg)	EPA Region IV and OSWER Sediment Screening Values ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Ditches East of Railroad Tracks				
Arsenic	3.41E+02	7.24E+00	4.71E+01	Yes
Cadmium	9.87E+02	1.00E+00	9.87E+02	Yes
Lead	5.50E+03	3.02E+01	1.82E+02	Yes
Zinc	2.67E+04	1.24E+02	2.15E+02	Yes
		EHI	1.43E+03	
Ditches West of Railroad Track				
Arsenic	1.97E+02	7.24E+00	2.72E+01	Yes
Cadmium	2.15E+02	1.00E+00	2.15E+02	Yes
Lead	3.12E+03	3.02E+01	1.03E+02	Yes
Zinc	1.51E+04	1.24E+02	1.22E+02	Yes
		EHI	4.67E+02	
Drainage East of Strip Mine Pit				
Arsenic	1.60E+01	7.24E+00	2.21E+00	Yes
Cadmium	1.20E+01	1.00E+00	1.20E+01	Yes
Lead	1.82E+02	3.02E+01	6.03E+00	Yes
Zinc	3.59E+03	1.24E+02	2.90E+01	Yes
		EHI	4.92E+01	
City Lake				
Arsenic ^c	5.00E+00	7.24E+00	6.91E-01	HQ<1
Cadmium ^c	5.00E+00	1.00E+00	5.00E+00	Yes
Lead ^c	1.00E+01	3.02E+01	3.31E-01	HQ<1
Zinc	1.80E+02	1.24E+02	1.45E+00	Yes
		EHI	7.47E+00	
Pond at (b) (6)				
Arsenic ^c	5.00E+00	7.24E+00	6.91E-01	HQ<1
Cadmium ^c	5.00E+00	1.00E+00	5.00E+00	Yes
Lead ^c	1.00E+01	3.02E+01	3.31E-01	HQ<1
Zinc	5.20E+01	1.24E+02	4.19E-01	Yes
		EHI	6.44E+00	
Notes: mg/kg - milligrams per kilogram ^a Jones et. al., 1997 ES/ER/TM-95/R4 ^b Hazard Quotient = Maximum Concentration Detected in Sediment/EPA R4 and OSWER Sediment Screening Values ^c Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-6
Screening For Terrestrial Plants Based on Vegetation Sampled
from the On-site Waste, Off-Site, and Background Areas and
Soils Data from On-Site Non-Waste Area

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Blackberry Plant or Soils (mg/kg)	Plant Screening Benchmark (mg/kg)	Hazard Quotient	Chemical of Potential Ecological Concern
On-Site Waste Area Blackberry Plant Samples				
Arsenic	8.50E+00	10 ^a	8.50E-01	HQ<1
Cadmium	2.90E+00	29 ^b	1.00E-01	HQ<1
Lead	4.89E+02	50 ^a	9.78E+00	Yes
Zinc	5.99E+02	50 ^a	1.20E+01	Yes
		EHI	2.27E+01	
On-Site Non-Waste Area Soils				
Arsenic	4.16E+02	10 ^a	4.16E+01	Yes
Cadmium	7.99E+02	29 ^b	2.76E+01	Yes
Lead	5.17E+03	50 ^a	1.03E+02	Yes
Zinc	4.14E+04	50 ^a	8.28E+02	Yes
		EHI	1.00E+03	
Off-Site Area Blackberry Plant Samples				
Arsenic	1.70E-01	10 ^a	1.70E-02	HQ<1
Cadmium	5.60E-01	29 ^b	1.93E-02	HQ<1
Lead	4.30E+00	50 ^a	8.60E-02	HQ<1
Zinc	1.25E+02	50 ^a	2.50E+00	Yes
		EHI	2.62E+00	
Background Blackberry Plant Samples				
Arsenic	1.50E-01	10 ^a	1.50E-02	HQ<1
Cadmium	3.50E-02	29 ^b	1.21E-03	HQ<1
Lead	9.30E+00	50 ^a	1.86E-01	HQ<1
Zinc	1.71E+01	50 ^a	3.42E-01	HQ<1
		EHI	5.44E-01	
Notes:				
mg/kg - milligrams per kilogram				
^a Efroymsen et al, 1997c ES/ER/TM-85/R3				
^b USEPA Region 6 Plant Surface Soil Screening Benchmark (USEPA, 2004)				

Table 7-7
Surface Water Screening for Aquatic Plants
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Lowest Chronic Value for Aquatic Plants ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Pond 1				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium	3.70E-02	2.00E-03	1.85E+01	Yes
Lead	5.60E-02	5.00E-01	1.12E-01	HQ<1
Zinc	1.68E+00	3.00E-02	5.60E+01	Yes
		EHI	7.46E+01	
Pond 2				
Arsenic	1.70E-02	2.32E+00	7.33E-03	HQ<1
Cadmium	2.20E-02	2.00E-03	1.10E+01	Yes
Lead	7.50E-02	5.00E-01	1.50E-01	HQ<1
Zinc	7.81E-01	3.00E-02	2.60E+01	Yes
		EHI	3.72E+01	
Pond 3				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium	8.00E-03	2.00E-03	4.00E+00	Yes
Lead	3.00E-02	5.00E-01	6.00E-02	HQ<1
Zinc	3.75E-01	3.00E-02	1.25E+01	Yes
		EHI	1.66E+01	
Pond 4				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium	1.60E-02	2.00E-03	8.00E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc	1.08E+00	3.00E-02	3.60E+01	Yes
		EHI	4.40E+01	
Pond 5				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium ^c	2.50E-03	2.00E-03	1.25E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc	2.61E-01	3.00E-02	8.70E+00	Yes
		EHI	9.96E+00	
TFM Mid-Site Ravine				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium	1.84E-01	2.00E-03	9.20E+01	Yes
Lead	2.00E-02	5.00E-01	4.00E-02	HQ<1
Zinc	8.25E+00	3.00E-02	2.75E+02	Yes
		EHI	3.67E+02	
Strip Mine Pit				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium ^c	2.50E-03	2.00E-03	1.25E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc ^c	2.50E-03	3.00E-02	8.33E-02	HQ<1
		EHI	1.35E+00	

Table 7-7
Surface Water Screening for Aquatic Plants
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Lowest Chronic Value for Aquatic Plants ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Farm Pond				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium ^c	2.50E-03	2.00E-03	1.25E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc ^c	2.50E-03	3.00E-02	8.33E-02	HQ<1
		EHI	1.35E+00	
Drainage East of Strip Mine Pit				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium ^c	2.50E-03	2.00E-03	1.25E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc	8.49E-01	3.00E-02	2.83E+01	Yes
		EHI	2.96E+01	
Ditches and Drainage Along US Hwy 169				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium	1.98E-01	2.00E-03	9.90E+01	Yes
Lead	2.60E-02	5.00E-01	5.20E-02	HQ<1
Zinc	8.39E+00	3.00E-02	2.80E+02	Yes
		EHI	3.79E+02	
Background (City lake and BG-OFF-01/SW01)				
Arsenic ^c	5.00E-03	2.32E+00	2.16E-03	HQ<1
Cadmium ^c	2.50E-03	2.00E-03	1.25E+00	Yes
Lead ^c	5.00E-03	5.00E-01	1.00E-02	HQ<1
Zinc ^c	2.50E-03	3.00E-02	8.33E-02	HQ<1
		EHI	1.35E+00	
Notes: mg/L - milligrams per liter ^a ORNL, 1996a ES/ER/TM-96/R2 ^b Hazard Quotient = Maximum Concentration detected in Surface Water/Lowest Chronic Value for Aquatic Plants ^c Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-8
Surface Water Screening for Aquatic Invertebrates
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Lowest Chronic Value for Daphnids ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Pond 1				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium	3.70E-02	1.50E-04	2.47E+02	Yes
Lead	5.60E-02	1.23E-02	4.57E+00	Yes
Zinc	1.68E+00	4.67E-02	3.60E+01	Yes
		EHI	2.87E+02	
Pond 2				
Arsenic	1.70E-02	5.40E+00	3.15E-03	HQ<1
Cadmium	2.20E-02	1.50E-04	1.47E+02	Yes
Lead	7.50E-02	1.23E-02	6.12E+00	Yes
Zinc	7.81E-01	4.67E-02	1.67E+01	Yes
		EHI	1.70E+02	
Pond 3				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium	8.00E-03	1.50E-04	5.33E+01	Yes
Lead	3.00E-02	1.23E-02	2.45E+00	Yes
Zinc	3.75E-01	4.67E-02	8.02E+00	Yes
		EHI	6.38E+01	
Pond 4				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium	1.60E-02	1.50E-04	1.07E+02	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc	1.08E+00	4.67E-02	2.31E+01	Yes
		EHI	1.30E+02	
Pond 5				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium ^c	2.50E-03	1.50E-04	1.67E+01	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc	2.61E-01	4.67E-02	5.59E+00	Yes
		EHI	2.27E+01	
TFM Mid-Site Ravine				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium	1.84E-01	1.50E-04	1.23E+03	Yes
Lead	2.00E-02	1.23E-02	1.63E+00	Yes
Zinc	8.25E+00	4.67E-02	1.77E+02	Yes
		EHI	1.40E+03	
Strip Mine Pit				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium ^c	2.50E-03	1.50E-04	1.67E+01	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc ^c	2.50E-03	4.67E-02	5.35E-02	HQ<1
		EHI	1.71E+01	

Table 7-8
Surface Water Screening for Aquatic Invertebrates
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Lowest Chronic Value for Daphnids ^a	Hazard Quotient ^b	Chemical of Potential Ecological Concern
Farm Pond				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium ^c	2.50E-03	1.50E-04	1.67E+01	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc ^c	2.50E-03	4.67E-02	5.35E-02	HQ<1
		EHI	1.71E+01	
Drainage East of Strip Mine Pit				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium ^c	2.50E-03	1.50E-04	1.67E+01	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc	8.49E-01	4.67E-02	1.82E+01	Yes
		EHI	3.52E+01	
Ditches and Drainage Along US Hwy 169				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium	1.98E-01	1.50E-04	1.32E+03	Yes
Lead	2.60E-02	1.23E-02	2.12E+00	Yes
Zinc	8.39E+00	4.67E-02	1.80E+02	Yes
		EHI	1.50E+03	
Background (City lake and BG-OFF-01/SW01)				
Arsenic ^c	5.00E-03	5.40E+00	9.26E-04	HQ<1
Cadmium ^c	2.50E-03	1.50E-04	1.67E+01	Yes
Lead ^c	5.00E-03	1.23E-02	4.08E-01	HQ<1
Zinc ^c	2.50E-03	4.67E-02	5.35E-02	HQ<1
		EHI	1.71E+01	
Notes: mg/L - milligrams per liter ^a ORNL, 1996a ES/ER/TM-96/R2 ^b Hazard Quotient = Maximum Concentration detected in Surface Water/Lowest Chronic Value for Daphnids ^c Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-9
Fish Screening Based on Surface Water to Fish
Bioconcentration Factor
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Lowest Chronic Value for Fish ¹	Ecological Hazard Quotient ²	Chemical of Potential Ecological Concern
Strip Mine Pit				
Arsenic ^c	5.00E-03	2.96E+00	1.69E-03	HQ<1
Cadmium ^c	2.50E-03	1.70E-03	1.47E+00	Yes
Lead ^c	5.00E-03	1.89E-02	2.65E-01	HQ<1
Zinc ^c	2.50E-03	3.64E-02	6.87E-02	HQ<1
		EHI	1.81E+00	
Farm Pond				
Arsenic ^c	5.00E-03	2.96E+00	1.69E-03	HQ<1
Cadmium ^c	2.50E-03	1.70E-03	1.47E+00	Yes
Lead ^c	5.00E-03	1.89E-02	2.65E-01	HQ<1
Zinc ^c	2.50E-03	3.64E-02	6.87E-02	HQ<1
		EHI	1.81E+00	
Drainage East of Strip Mine Pit				
Arsenic ^c	5.00E-03	2.96E+00	1.69E-03	HQ<1
Cadmium ^c	2.50E-03	1.70E-03	1.47E+00	Yes
Lead ^c	5.00E-03	1.89E-02	2.65E-01	HQ<1
Zinc	8.49E-01	3.64E-02	2.33E+01	Yes
		EHI	2.51E+01	
Ditches and Drainage Along US Hwy 169				
Arsenic ^c	5.00E-03	2.96E+00	1.69E-03	HQ<1
Cadmium	1.98E-01	1.70E-03	1.16E+02	Yes
Lead	2.60E-02	1.89E-02	1.38E+00	Yes
Zinc	8.39E+00	3.64E-02	2.30E+02	Yes
		EHI	3.48E+02	
Background				
Arsenic ^c	5.00E-03	2.96E+00	1.69E-03	HQ<1
Cadmium ^c	2.50E-03	1.70E-03	1.47E+00	Yes
Lead ^c	5.00E-03	1.89E-02	2.65E-01	HQ<1
Zinc ^c	2.50E-03	3.64E-02	6.87E-02	HQ<1
		EHI	1.81E+00	
Notes: mg/kg - milligrams per kilograms kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ¹ ORNL, 1996a ES/ER/TM-96/R2 ² Ecological Hazard Quotient = Maximum Concentration detected in Surface Water/Lowest Chronic Value for Fish ^c Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-10
Surface Water Screening for Fish Based on Historic Fish Tissue Data from On-Site
Strip Mine Pit

Remedial investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Fish From Strip Mine Pit ^a (mg/kg)	Lowest Chronic Value for Fish ^b	Hazard Quotient ^c	Chemical of Potential Ecological Concern
Arsenic	4.35E-01	2.96E+00	1.47E-01	HQ<1
Cadmium	2.18E-01	1.70E-03	1.28E+02	Yes
Lead	1.31E-01	1.89E-02	6.91E+00	Yes
Zinc	1.81E+01	3.64E-02	4.97E+02	Yes
		EHI	6.32E+02	
Notes: mg/L - milligrams per liter ^a Maximum concentration detected in fish tissue samples from the Strip Mine Pit as reported in Removal Action Assessment Report for Tulsa Fuel Manufacturing Site, Collinsville, Tulsa County, Oklahoma dated May 14, 1999. ^b ORNL, 1996a ES/ER/TM-96/R2 ^c Hazard Quotient = Maximum Concentration detected in Surface Water/Lowest Chronic Value for Fish				

Table 7-11
Chemical Intake for Representative Wildlife Species Based on
Incidental Soil Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil ^b (kg/day)	Dose Received from Soil (mg/kg/day)
On-Site Waste Area Soils 0-0.5 ft bgs				
Arsenic	1.17E+03	Short-tailed Shrew	1.17E-03	1.37E+00
Arsenic	1.17E+03	White-footed Mouse	6.80E-05	7.96E-02
Arsenic	1.17E+03	Meadow Vole	1.20E-04	1.40E-01
Arsenic	1.17E+03	Cottontail Rabbit	1.49E-02	1.74E+01
Arsenic	1.17E+03	Red Fox	1.26E-02	1.47E+01
Arsenic	1.17E+03	Raccoon	1.11E-02	1.30E+01
Arsenic	1.17E+03	White-tailed Deer	3.50E-02	4.10E+01
Arsenic	1.17E+03	American Robin	8.74E-03	1.02E+01
Arsenic	1.17E+03	Red-tailed Hawk	3.05E-03	3.57E+00
Cadmium	1.62E+03	Short-tailed Shrew	1.17E-03	1.90E+00
Cadmium	1.62E+03	White-footed Mouse	6.80E-05	1.10E-01
Cadmium	1.62E+03	Meadow Vole	1.20E-04	1.94E-01
Cadmium	1.62E+03	Cottontail Rabbit	1.49E-02	2.41E+01
Cadmium	1.62E+03	Red Fox	1.26E-02	2.04E+01
Cadmium	1.62E+03	Raccoon	1.11E-02	1.80E+01
Cadmium	1.62E+03	White-tailed Deer	3.50E-02	5.67E+01
Cadmium	1.62E+03	American Robin	8.74E-03	1.42E+01
Cadmium	1.62E+03	Red-tailed Hawk	3.05E-03	4.94E+00
Lead	7.17E+04	Short-tailed Shrew	1.17E-03	8.39E+01
Lead	7.17E+04	White-footed Mouse	6.80E-05	4.88E+00
Lead	7.17E+04	Meadow Vole	1.20E-04	8.60E+00
Lead	7.17E+04	Cottontail Rabbit	1.49E-02	1.07E+03
Lead	7.17E+04	Red Fox	1.26E-02	9.03E+02
Lead	7.17E+04	Raccoon	1.11E-02	7.96E+02
Lead	7.17E+04	White-tailed Deer	3.50E-02	2.51E+03
Lead	7.17E+04	American Robin	8.74E-03	6.27E+02
Lead	7.17E+04	Red-tailed Hawk	3.05E-03	2.19E+02
Zinc	1.65E+05	Short-tailed Shrew	1.17E-03	1.93E+02
Zinc	1.65E+05	White-footed Mouse	6.80E-05	1.12E+01
Zinc	1.65E+05	Meadow Vole	1.20E-04	1.98E+01
Zinc	1.65E+05	Cottontail Rabbit	1.49E-02	2.46E+03
Zinc	1.65E+05	Red Fox	1.26E-02	2.08E+03
Zinc	1.65E+05	Raccoon	1.11E-02	1.83E+03
Zinc	1.65E+05	White-tailed Deer	3.50E-02	5.78E+03
Zinc	1.65E+05	American Robin	8.74E-03	1.44E+03
Zinc	1.65E+05	Red-tailed Hawk	3.05E-03	5.04E+02
On-Site Non-Waste Area Soils 0-0.5 ft bgs				
Arsenic	4.16E+02	Short-tailed Shrew	1.17E-03	4.87E-01
Arsenic	4.16E+02	White-footed Mouse	6.80E-05	2.83E-02
Arsenic	4.16E+02	Meadow Vole	1.20E-04	4.99E-02
Arsenic	4.16E+02	Cottontail Rabbit	1.49E-02	6.20E+00
Arsenic	4.16E+02	Red Fox	1.26E-02	5.24E+00
Arsenic	4.16E+02	Raccoon	1.11E-02	4.62E+00
Arsenic	4.16E+02	White-tailed Deer	3.50E-02	1.46E+01
Arsenic	4.16E+02	American Robin	8.74E-03	3.64E+00
Arsenic	4.16E+02	Red-tailed Hawk	3.05E-03	1.27E+00
Cadmium	7.99E+02	Short-tailed Shrew	1.17E-03	9.35E-01
Cadmium	7.99E+02	White-footed Mouse	6.80E-05	5.43E-02
Cadmium	7.99E+02	Meadow Vole	1.20E-04	9.59E-02
Cadmium	7.99E+02	Cottontail Rabbit	1.49E-02	1.19E+01
Cadmium	7.99E+02	Red Fox	1.26E-02	1.01E+01
Cadmium	7.99E+02	Raccoon	1.11E-02	8.87E+00
Cadmium	7.99E+02	White-tailed Deer	3.50E-02	2.80E+01

Table 7-11
Chemical Intake for Representative Wildlife Species Based on
Incidental Soil Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil ^b (kg/day)	Dose Received from Soil (mg/kg/day)
Cadmium	7.99E+02	American Robin	8.74E-03	6.98E+00
Cadmium	7.99E+02	Red-tailed Hawk	3.05E-03	2.44E+00
Lead	5.17E+03	Short-tailed Shrew	1.17E-03	6.05E+00
Lead	5.17E+03	White-footed Mouse	6.80E-05	3.52E-01
Lead	5.17E+03	Meadow Vole	1.20E-04	6.20E-01
Lead	5.17E+03	Cottontail Rabbit	1.49E-02	7.70E+01
Lead	5.17E+03	Red Fox	1.26E-02	6.51E+01
Lead	5.17E+03	Raccoon	1.11E-02	5.74E+01
Lead	5.17E+03	White-tailed Deer	3.50E-02	1.81E+02
Lead	5.17E+03	American Robin	8.74E-03	4.52E+01
Lead	5.17E+03	Red-tailed Hawk	3.05E-03	1.58E+01
Zinc	4.14E+04	Short-tailed Shrew	1.17E-03	4.84E+01
Zinc	4.14E+04	White-footed Mouse	6.80E-05	2.82E+00
Zinc	4.14E+04	Meadow Vole	1.20E-04	4.97E+00
Zinc	4.14E+04	Cottontail Rabbit	1.49E-02	6.17E+02
Zinc	4.14E+04	Red Fox	1.26E-02	5.22E+02
Zinc	4.14E+04	Raccoon	1.11E-02	4.60E+02
Zinc	4.14E+04	White-tailed Deer	3.50E-02	1.45E+03
Zinc	4.14E+04	American Robin	8.74E-03	3.62E+02
Zinc	4.14E+04	Red-tailed Hawk	3.05E-03	1.26E+02
Off-Site Soils Maximums Detected on ODOT Property 0-0.25 ft bgs				
Arsenic	6.50E+02	Short-tailed Shrew	1.17E-03	7.61E-01
Arsenic	6.50E+02	White-footed Mouse	6.80E-05	4.42E-02
Arsenic	6.50E+02	Meadow Vole	1.20E-04	7.80E-02
Arsenic	6.50E+02	Cottontail Rabbit	1.49E-02	9.69E+00
Arsenic	6.50E+02	Red Fox	1.26E-02	8.19E+00
Arsenic	6.50E+02	Raccoon	1.11E-02	7.22E+00
Arsenic	6.50E+02	White-tailed Deer	3.50E-02	2.28E+01
Arsenic	6.50E+02	American Robin	8.74E-03	5.68E+00
Arsenic	6.50E+02	Red-tailed Hawk	3.05E-03	1.98E+00
Cadmium	1.93E+02	Short-tailed Shrew	1.17E-03	2.26E-01
Cadmium	1.93E+02	White-footed Mouse	6.80E-05	1.31E-02
Cadmium	1.93E+02	Meadow Vole	1.20E-04	2.32E-02
Cadmium	1.93E+02	Cottontail Rabbit	1.49E-02	2.88E+00
Cadmium	1.93E+02	Red Fox	1.26E-02	2.43E+00
Cadmium	1.93E+02	Raccoon	1.11E-02	2.14E+00
Cadmium	1.93E+02	White-tailed Deer	3.50E-02	6.76E+00
Cadmium	1.93E+02	American Robin	8.74E-03	1.69E+00
Cadmium	1.93E+02	Red-tailed Hawk	3.05E-03	5.89E-01
Lead	1.59E+04	Short-tailed Shrew	1.17E-03	1.86E+01
Lead	1.59E+04	White-footed Mouse	6.80E-05	1.08E+00
Lead	1.59E+04	Meadow Vole	1.20E-04	1.91E+00
Lead	1.59E+04	Cottontail Rabbit	1.49E-02	2.37E+02
Lead	1.59E+04	Red Fox	1.26E-02	2.00E+02
Lead	1.59E+04	Raccoon	1.11E-02	1.76E+02
Lead	1.59E+04	White-tailed Deer	3.50E-02	5.57E+02
Lead	1.59E+04	American Robin	8.74E-03	1.39E+02
Lead	1.59E+04	Red-tailed Hawk	3.05E-03	4.85E+01
Zinc	4.25E+04	Short-tailed Shrew	1.17E-03	4.97E+01

Table 7-11
Chemical Intake for Representative Wildlife Species Based on
Incidental Soil Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil ^b (kg/day)	Dose Received from Soil (mg/kg/day)
Zinc	4.25E+04	White-footed Mouse	6.80E-05	2.89E+00
Zinc	4.25E+04	Meadow Vole	1.20E-04	5.10E+00
Zinc	4.25E+04	Cottontail Rabbit	1.49E-02	6.33E+02
Zinc	4.25E+04	Red Fox	1.26E-02	5.36E+02
Zinc	4.25E+04	Raccoon	1.11E-02	4.72E+02
Zinc	4.25E+04	White-tailed Deer	3.50E-02	1.49E+03
Zinc	4.25E+04	American Robin	8.74E-03	3.71E+02
Zinc	4.25E+04	Red-tailed Hawk	3.05E-03	1.30E+02
Background Soils				
Arsenic	1.60E+01	Short-tailed Shrew	1.17E-03	1.87E-02
Arsenic	1.60E+01	White-footed Mouse	6.80E-05	1.09E-03
Arsenic	1.60E+01	Meadow Vole	1.20E-04	1.92E-03
Arsenic	1.60E+01	Cottontail Rabbit	1.49E-02	2.38E-01
Arsenic	1.60E+01	Red Fox	1.26E-02	2.02E-01
Arsenic	1.60E+01	Raccoon	1.11E-02	1.78E-01
Arsenic	1.60E+01	White-tailed Deer	3.50E-02	5.60E-01
Arsenic	1.60E+01	American Robin	8.74E-03	1.40E-01
Arsenic	1.60E+01	Red-tailed Hawk	3.05E-03	4.88E-02
Cadmium ^a	5.00E+00	Short-tailed Shrew	1.17E-03	5.85E-03
Cadmium ^a	5.00E+00	White-footed Mouse	6.80E-05	3.40E-04
Cadmium ^a	5.00E+00	Meadow Vole	1.20E-04	6.00E-04
Cadmium ^a	5.00E+00	Cottontail Rabbit	1.49E-02	7.45E-02
Cadmium ^a	5.00E+00	Red Fox	1.26E-02	6.30E-02
Cadmium ^a	5.00E+00	Raccoon	1.11E-02	5.55E-02
Cadmium ^a	5.00E+00	White-tailed Deer	3.50E-02	1.75E-01
Cadmium ^a	5.00E+00	American Robin	8.74E-03	4.37E-02
Cadmium ^a	5.00E+00	Red-tailed Hawk	3.05E-03	1.53E-02
Lead	2.86E+01	Short-tailed Shrew	1.17E-03	3.35E-02
Lead	2.86E+01	White-footed Mouse	6.80E-05	1.94E-03
Lead	2.86E+01	Meadow Vole	1.20E-04	3.43E-03
Lead	2.86E+01	Cottontail Rabbit	1.49E-02	4.26E-01
Lead	2.86E+01	Red Fox	1.26E-02	3.60E-01
Lead	2.86E+01	Raccoon	1.11E-02	3.17E-01
Lead	2.86E+01	White-tailed Deer	3.50E-02	1.00E+00
Lead	2.86E+01	American Robin	8.74E-03	2.50E-01
Lead	2.86E+01	Red-tailed Hawk	3.05E-03	8.73E-02
Zinc	1.96E+02	Short-tailed Shrew	1.17E-03	2.29E-01
Zinc	1.96E+02	White-footed Mouse	6.80E-05	1.33E-02
Zinc	1.96E+02	Meadow Vole	1.20E-04	2.35E-02
Zinc	1.96E+02	Cottontail Rabbit	1.49E-02	2.92E+00
Zinc	1.96E+02	Red Fox	1.26E-02	2.47E+00
Zinc	1.96E+02	Raccoon	1.11E-02	2.18E+00
Zinc	1.96E+02	White-tailed Deer	3.50E-02	6.86E+00
Zinc	1.96E+02	American Robin	8.74E-03	1.71E+00
Zinc	1.96E+02	Red-tailed Hawk	3.05E-03	5.98E-01
Notes:				
mg/kg - milligrams per kilogram				
kg/day - kilograms per day				
mg/kg/day - milligrams per kilogram per day				

Table 7-11
Chemical Intake for Representative Wildlife Species Based on
Incidental Soil Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil ^b (kg/day)	Dose Received from Soil (mg/kg/day)
^a Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				
^b Consumption rate takes into account that 1/2 of the raccoon's total sediment and soil intake is composed of soils.				

Table 7-12
Chemical Intake For Representative Wildlife Species Based on
Incidental Sediment Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Pond Sediments (mg/kg)	Representative Wildlife Species	Consumption Rate of Sediment ³ (kg/day)	Dose Received from Sediment (mg/kg/day)
Maximum Detect On-Site Waste Area Sediments (Pond 1 and Mid-Site Ravine Sediments)				
Arsenic	5.88E+02	Raccoon	1.11E-02	6.53E+00
Arsenic	5.88E+02	Mallard	2.00E-03	1.18E+00
Arsenic	5.88E+02	Great Blue Heron	4.00E-02	2.35E+01
Cadmium	1.40E+03	Raccoon	1.11E-02	1.55E+01
Cadmium	1.40E+03	Mallard	2.00E-03	2.80E+00
Cadmium	1.40E+03	Great Blue Heron	4.00E-02	5.60E+01
Lead	8.15E+03	Raccoon	1.11E-02	9.05E+01
Lead	8.15E+03	Mallard	2.00E-03	1.63E+01
Lead	8.15E+03	Great Blue Heron	4.00E-02	3.26E+02
Zinc	4.47E+04	Raccoon	1.11E-02	4.96E+02
Zinc	4.47E+04	Mallard	2.00E-03	8.94E+01
Zinc	4.47E+04	Great Blue Heron	4.00E-02	1.79E+03
Maximum Detect On-Site Non-Waste Area Sediment (Pond 4 Sediment)				
Arsenic	5.70E+01	Raccoon	1.11E-02	6.33E-01
Arsenic	5.70E+01	Mallard	2.00E-03	1.14E-01
Cadmium	1.21E+02	Raccoon	1.11E-02	1.34E+00
Cadmium	1.21E+02	Mallard	2.00E-03	2.42E-01
Lead	9.75E+02	Raccoon	1.11E-02	1.08E+01
Lead	9.75E+02	Mallard	2.00E-03	1.95E+00
Zinc	7.14E+03	Raccoon	1.11E-02	7.93E+01
Zinc	7.14E+03	Mallard	2.00E-03	1.43E+01
Maximum Detected Off-Site Sediment (Ditches East of Railroad Tracks Sediment)				
Arsenic	3.41E+02	Raccoon	1.11E-02	3.79E+00
Arsenic	3.41E+02	Mallard	2.00E-03	6.82E-01
Arsenic	3.41E+02	Great Blue Heron	4.00E-02	1.36E+01
Cadmium	9.87E+02	Raccoon	1.11E-02	1.10E+01
Cadmium	9.87E+02	Mallard	2.00E-03	1.97E+00
Cadmium	9.87E+02	Great Blue Heron	4.00E-02	3.95E+01
Lead	5.50E+03	Raccoon	1.11E-02	6.11E+01
Lead	5.50E+03	Mallard	2.00E-03	1.10E+01
Lead	5.50E+03	Great Blue Heron	4.00E-02	2.20E+02
Zinc	2.67E+04	Raccoon	1.11E-02	2.96E+02
Zinc	2.67E+04	Mallard	2.00E-03	5.34E+01
Zinc	2.67E+04	Great Blue Heron	4.00E-02	1.07E+03

Table 7-12
Chemical Intake For Representative Wildlife Species Based on
Incidental Sediment Ingestion
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Pond Sediments (mg/kg)	Representative Wildlife Species	Consumption Rate of Sediment ³ (kg/day)	Dose Received from Sediment (mg/kg/day)
Maximum Detected Background Sediment (City Lake Sediment)				
Arsenic ^a	5.00E+00	Raccoon	1.11E-02	5.55E-02
Arsenic ^a	5.00E+00	Mallard	2.00E-03	1.00E-02
Arsenic ^a	5.00E+00	Great Blue Heron	4.00E-02	2.00E-01
Cadmium ^a	5.00E+00	Raccoon	1.11E-02	5.55E-02
Cadmium ^a	5.00E+00	Mallard	2.00E-03	1.00E-02
Cadmium ^a	5.00E+00	Great Blue Heron	4.00E-02	2.00E-01
Lead ^a	1.00E+01	Raccoon	1.11E-02	1.11E-01
Lead ^a	1.00E+01	Mallard	2.00E-03	2.00E-02
Lead ^a	1.00E+01	Great Blue Heron	4.00E-02	4.00E-01
Zinc	1.80E+02	Raccoon	1.11E-02	2.00E+00
Zinc	1.80E+02	Mallard	2.00E-03	3.60E-01
Zinc	1.80E+02	Great Blue Heron	4.00E-02	7.20E+00
Notes: mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Non-Detect within analytical sampling but evaluated using 1/2 detection limits. ^b Consumption rate takes into account that 1/2 of the raccoon's total sediment and soil intake is composed of sediments.				

Table 7-13
Chemical Intake for Representative Wildlife Species Based on
Ingestion of Surface Water

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Representative Wildlife Species	Consumption Rate of Water (L/day)	Dose Received from Surface Water (mg/L/day)
On-Site Waste Area Surface Water (Pond 2 and Mid-Site Ravine)				
Arsenic	1.70E-02	Short-tailed Shrew	3.30E-03	5.61E-05
Arsenic	1.70E-02	White-footed Mouse	6.60E-03	1.12E-04
Arsenic	1.70E-02	Meadow Vole	6.00E-03	1.02E-04
Arsenic	1.70E-02	Cottontail Rabbit	1.16E-01	1.97E-03
Arsenic	1.70E-02	Red Fox	3.80E-01	6.46E-03
Arsenic	1.70E-02	Raccoon	3.83E-01	6.51E-03
Arsenic	1.70E-02	White-tailed Deer	3.70E+00	6.29E-02
Arsenic	1.70E-02	American Robin	1.06E-02	1.80E-04
Arsenic	1.70E-02	Belted Kingfisher	1.60E-02	2.72E-04
Arsenic	1.70E-02	Red-tailed Hawk	6.40E-02	1.09E-03
Arsenic	1.70E-02	Great Blue Heron	1.16E-01	1.97E-03
Arsenic	1.70E-02	Mallard	7.89E-02	1.34E-03
Cadmium	1.84E-01	Short-tailed Shrew	3.30E-03	6.07E-04
Cadmium	1.84E-01	White-footed Mouse	6.60E-03	1.21E-03
Cadmium	1.84E-01	Meadow Vole	6.00E-03	1.10E-03
Cadmium	1.84E-01	Cottontail Rabbit	1.16E-01	2.13E-02
Cadmium	1.84E-01	Red Fox	3.80E-01	6.99E-02
Cadmium	1.84E-01	Raccoon	3.83E-01	7.05E-02
Cadmium	1.84E-01	White-tailed Deer	3.70E+00	6.81E-01
Cadmium	1.84E-01	American Robin	1.06E-02	1.95E-03
Cadmium	1.84E-01	Belted Kingfisher	1.60E-02	2.94E-03
Cadmium	1.84E-01	Red-tailed Hawk	6.40E-02	1.18E-02
Cadmium	1.84E-01	Great Blue Heron	1.16E-01	2.13E-02
Cadmium	1.84E-01	Mallard	7.89E-02	1.45E-02
Lead	7.50E-02	Short-tailed Shrew	3.30E-03	2.48E-04
Lead	7.50E-02	White-footed Mouse	6.60E-03	4.95E-04
Lead	7.50E-02	Meadow Vole	6.00E-03	4.50E-04
Lead	7.50E-02	Cottontail Rabbit	1.16E-01	8.70E-03
Lead	7.50E-02	Red Fox	3.80E-01	2.85E-02
Lead	7.50E-02	Raccoon	3.83E-01	2.87E-02
Lead	7.50E-02	White-tailed Deer	3.70E+00	2.78E-01
Lead	7.50E-02	American Robin	1.06E-02	7.95E-04
Lead	7.50E-02	Belted Kingfisher	1.60E-02	1.20E-03
Lead	7.50E-02	Red-tailed Hawk	6.40E-02	4.80E-03
Lead	7.50E-02	Great Blue Heron	1.16E-01	8.69E-03
Lead	7.50E-02	Mallard	7.89E-02	5.92E-03
Zinc	8.25E+00	Short-tailed Shrew	3.30E-03	2.72E-02
Zinc	8.25E+00	White-footed Mouse	6.60E-03	5.45E-02
Zinc	8.25E+00	Meadow Vole	6.00E-03	4.95E-02
Zinc	8.25E+00	Cottontail Rabbit	1.16E-01	9.57E-01
Zinc	8.25E+00	Red Fox	3.80E-01	3.14E+00

Table 7-13
Chemical Intake for Representative Wildlife Species Based on
Ingestion of Surface Water

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Representative Wildlife Species	Consumption Rate of Water (L/day)	Dose Received from Surface Water (mg/L/day)
Zinc	8.25E+00	Raccoon	3.83E-01	3.16E+00
Zinc	8.25E+00	White-tailed Deer	3.70E+00	3.05E+01
Zinc	8.25E+00	American Robin	1.06E-02	8.75E-02
Zinc	8.25E+00	Belted Kingfisher	1.60E-02	1.32E-01
Zinc	8.25E+00	Red-tailed Hawk	6.40E-02	5.28E-01
Zinc	8.25E+00	Great Blue Heron	1.16E-01	9.56E-01
Zinc	8.25E+00	Mallard	7.89E-02	6.51E-01
On-Site Non-Waste Area Surface Water (Pond 4)				
Arsenic ^a	5.00E-03	Short-tailed Shrew	3.30E-03	1.65E-05
Arsenic ^a	5.00E-03	White-footed Mouse	6.60E-03	3.30E-05
Arsenic ^a	5.00E-03	Meadow Vole	6.00E-03	3.00E-05
Arsenic ^a	5.00E-03	Cottontail Rabbit	1.16E-01	5.80E-04
Arsenic ^a	5.00E-03	Red Fox	3.80E-01	1.90E-03
Arsenic ^a	5.00E-03	Raccoon	3.83E-01	1.92E-03
Arsenic ^a	5.00E-03	White-tailed Deer	3.70E+00	1.85E-02
Arsenic ^a	5.00E-03	American Robin	1.06E-02	5.30E-05
Arsenic ^a	5.00E-03	Red-tailed Hawk	6.40E-02	3.20E-04
Arsenic ^a	5.00E-03	Mallard	7.89E-02	3.94E-04
Cadmium	1.60E-02	Short-tailed Shrew	3.30E-03	5.28E-05
Cadmium	1.60E-02	White-footed Mouse	6.60E-03	1.06E-04
Cadmium	1.60E-02	Meadow Vole	6.00E-03	9.60E-05
Cadmium	1.60E-02	Cottontail Rabbit	1.16E-01	1.86E-03
Cadmium	1.60E-02	Red Fox	3.80E-01	6.08E-03
Cadmium	1.60E-02	Raccoon	3.83E-01	6.13E-03
Cadmium	1.60E-02	White-tailed Deer	3.70E+00	5.92E-02
Cadmium	1.60E-02	American Robin	1.06E-02	1.70E-04
Cadmium	1.60E-02	Red-tailed Hawk	6.40E-02	1.02E-03
Cadmium	1.60E-02	Mallard	7.89E-02	1.26E-03
Lead ^a	5.00E-03	Short-tailed Shrew	3.30E-03	1.65E-05
Lead ^a	5.00E-03	White-footed Mouse	6.60E-03	3.30E-05
Lead ^a	5.00E-03	Meadow Vole	6.00E-03	3.00E-05
Lead ^a	5.00E-03	Cottontail Rabbit	1.16E-01	5.80E-04
Lead ^a	5.00E-03	Red Fox	3.80E-01	1.90E-03
Lead ^a	5.00E-03	Raccoon	3.83E-01	1.92E-03
Lead ^a	5.00E-03	White-tailed Deer	3.70E+00	1.85E-02
Lead ^a	5.00E-03	American Robin	1.06E-02	5.30E-05
Lead ^a	5.00E-03	Red-tailed Hawk	6.40E-02	3.20E-04
Lead ^a	5.00E-03	Mallard	7.89E-02	3.94E-04
Zinc	1.08E+00	Short-tailed Shrew	3.30E-03	3.56E-03

Table 7-13
Chemical Intake for Representative Wildlife Species Based on
Ingestion of Surface Water

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Representative Wildlife Species	Consumption Rate of Water (L/day)	Dose Received from Surface Water (mg/L/day)
Zinc	1.08E+00	White-footed Mouse	6.60E-03	7.13E-03
Zinc	1.08E+00	Meadow Vole	6.00E-03	6.48E-03
Zinc	1.08E+00	Cottontail Rabbit	1.16E-01	1.25E-01
Zinc	1.08E+00	Red Fox	3.80E-01	4.10E-01
Zinc	1.08E+00	Raccoon	3.83E-01	4.14E-01
Zinc	1.08E+00	White-tailed Deer	3.70E+00	4.00E+00
Zinc	1.08E+00	American Robin	1.06E-02	1.14E-02
Zinc	1.08E+00	Red-tailed Hawk	6.40E-02	6.91E-02
Zinc	1.08E+00	Mallard	7.89E-02	8.52E-02
Off-Site Surface Water (Ditches and Drainage Along U.S. Hwy 169)				
Arsenic ^a	5.00E-03	Short-tailed Shrew	3.30E-03	1.65E-05
Arsenic ^a	5.00E-03	White-footed Mouse	6.60E-03	3.30E-05
Arsenic ^a	5.00E-03	Meadow Vole	6.00E-03	3.00E-05
Arsenic ^a	5.00E-03	Cottontail Rabbit	1.16E-01	5.80E-04
Arsenic ^a	5.00E-03	Red Fox	3.80E-01	1.90E-03
Arsenic ^a	5.00E-03	Raccoon	3.83E-01	1.92E-03
Arsenic ^a	5.00E-03	White-tailed Deer	3.70E+00	1.85E-02
Arsenic ^a	5.00E-03	American Robin	1.06E-02	5.30E-05
Arsenic ^a	5.00E-03	Belted Kingfisher	1.60E-02	8.00E-05
Arsenic ^a	5.00E-03	Red-tailed Hawk	6.40E-02	3.20E-04
Arsenic ^a	5.00E-03	Great Blue Heron	1.16E-01	5.80E-04
Arsenic ^a	5.00E-03	Mallard	7.89E-02	3.94E-04
Cadmium	1.98E-01	Short-tailed Shrew	3.30E-03	6.53E-04
Cadmium	1.98E-01	White-footed Mouse	6.60E-03	1.31E-03
Cadmium	1.98E-01	Meadow Vole	6.00E-03	1.19E-03
Cadmium	1.98E-01	Cottontail Rabbit	1.16E-01	2.30E-02
Cadmium	1.98E-01	Red Fox	3.80E-01	7.52E-02
Cadmium	1.98E-01	Raccoon	3.83E-01	7.58E-02
Cadmium	1.98E-01	White-tailed Deer	3.70E+00	7.33E-01
Cadmium	1.98E-01	American Robin	1.06E-02	2.10E-03
Cadmium	1.98E-01	Belted Kingfisher	1.60E-02	3.17E-03
Cadmium	1.98E-01	Red-tailed Hawk	6.40E-02	1.27E-02
Cadmium	1.98E-01	Great Blue Heron	1.16E-01	2.30E-02
Cadmium	1.98E-01	Mallard	7.89E-02	1.56E-02
Lead	2.60E-02	Short-tailed Shrew	3.30E-03	8.58E-05
Lead	2.60E-02	White-footed Mouse	6.60E-03	1.72E-04
Lead	2.60E-02	Meadow Vole	6.00E-03	1.56E-04
Lead	2.60E-02	Cottontail Rabbit	1.16E-01	3.02E-03
Lead	2.60E-02	Red Fox	3.80E-01	9.88E-03
Lead	2.60E-02	Raccoon	3.83E-01	9.96E-03

Table 7-13
Chemical Intake for Representative Wildlife Species Based on
Ingestion of Surface Water
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Representative Wildlife Species	Consumption Rate of Water (L/day)	Dose Received from Surface Water (mg/L/day)
Lead	2.60E-02	White-tailed Deer	3.70E+00	9.62E-02
Lead	2.60E-02	American Robin	1.06E-02	2.76E-04
Lead	2.60E-02	Belted Kingfisher	1.60E-02	4.16E-04
Lead	2.60E-02	Red-tailed Hawk	6.40E-02	1.66E-03
Lead	2.60E-02	Great Blue Heron	1.16E-01	3.01E-03
Lead	2.60E-02	Mallard	7.89E-02	2.05E-03
Zinc	8.39E+00	Short-tailed Shrew	3.30E-03	2.77E-02
Zinc	8.39E+00	White-footed Mouse	6.60E-03	5.54E-02
Zinc	8.39E+00	Meadow Vole	6.00E-03	5.03E-02
Zinc	8.39E+00	Cottontail Rabbit	1.16E-01	9.73E-01
Zinc	8.39E+00	Red Fox	3.80E-01	3.19E+00
Zinc	8.39E+00	Raccoon	3.83E-01	3.21E+00
Zinc	8.39E+00	White-tailed Deer	3.70E+00	3.10E+01
Zinc	8.39E+00	American Robin	1.06E-02	8.89E-02
Zinc	8.39E+00	Belted Kingfisher	1.60E-02	1.34E-01
Zinc	8.39E+00	Red-tailed Hawk	6.40E-02	5.37E-01
Zinc	8.39E+00	Great Blue Heron	1.16E-01	9.73E-01
Zinc	8.39E+00	Mallard	7.89E-02	6.62E-01
Background Surface Water (City Lake)				
Arsenic ^a	5.00E-03	Short-tailed Shrew	3.30E-03	1.65E-05
Arsenic ^a	5.00E-03	White-footed Mouse	6.60E-03	3.30E-05
Arsenic ^a	5.00E-03	Meadow Vole	6.00E-03	3.00E-05
Arsenic ^a	5.00E-03	Cottontail Rabbit	1.16E-01	5.80E-04
Arsenic ^a	5.00E-03	Red Fox	3.80E-01	1.90E-03
Arsenic ^a	5.00E-03	Raccoon	3.83E-01	1.92E-03
Arsenic ^a	5.00E-03	White-tailed Deer	3.70E+00	1.85E-02
Arsenic ^a	5.00E-03	American Robin	1.06E-02	5.30E-05
Arsenic ^a	5.00E-03	Belted Kingfisher	1.60E-02	8.00E-05
Arsenic ^a	5.00E-03	Red-tailed Hawk	6.40E-02	3.20E-04
Arsenic ^a	5.00E-03	Great Blue Heron	1.16E-01	5.80E-04
Arsenic ^a	5.00E-03	Mallard	7.89E-02	3.94E-04
Cadmium ^a	2.50E-03	Short-tailed Shrew	3.30E-03	8.25E-06
Cadmium ^a	2.50E-03	White-footed Mouse	6.60E-03	1.65E-05
Cadmium ^a	2.50E-03	Meadow Vole	6.00E-03	1.50E-05
Cadmium ^a	2.50E-03	Cottontail Rabbit	1.16E-01	2.90E-04
Cadmium ^a	2.50E-03	Red Fox	3.80E-01	9.50E-04
Cadmium ^a	2.50E-03	Raccoon	3.83E-01	9.58E-04
Cadmium ^a	2.50E-03	White-tailed Deer	3.70E+00	9.25E-03
Cadmium ^a	2.50E-03	American Robin	1.06E-02	2.65E-05
Cadmium ^a	2.50E-03	Belted Kingfisher	1.60E-02	4.00E-05
Cadmium ^a	2.50E-03	Red-tailed Hawk	6.40E-02	1.60E-04

Table 7-13
Chemical Intake for Representative Wildlife Species Based on
Ingestion of Surface Water

Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Representative Wildlife Species	Consumption Rate of Water (L/day)	Dose Received from Surface Water (mg/L/day)
Cadmium ^a	2.50E-03	Great Blue Heron	1.16E-01	2.90E-04
Cadmium ^a	2.50E-03	Mallard	7.89E-02	1.97E-04
Lead ^a	5.00E-03	Short-tailed Shrew	3.30E-03	1.65E-05
Lead ^a	5.00E-03	White-footed Mouse	6.60E-03	3.30E-05
Lead ^a	5.00E-03	Meadow Vole	6.00E-03	3.00E-05
Lead ^a	5.00E-03	Cottontail Rabbit	1.16E-01	5.80E-04
Lead ^a	5.00E-03	Red Fox	3.80E-01	1.90E-03
Lead ^a	5.00E-03	Raccoon	3.83E-01	1.92E-03
Lead ^a	5.00E-03	White-tailed Deer	3.70E+00	1.85E-02
Lead ^a	5.00E-03	American Robin	1.06E-02	5.30E-05
Lead ^a	5.00E-03	Belted Kingfisher	1.60E-02	8.00E-05
Lead ^a	5.00E-03	Red-tailed Hawk	6.40E-02	3.20E-04
Lead ^a	5.00E-03	Great Blue Heron	1.16E-01	5.80E-04
Lead ^a	5.00E-03	Mallard	7.89E-02	3.94E-04
Zinc ^a	2.50E-03	Short-tailed Shrew	3.30E-03	8.25E-06
Zinc ^a	2.50E-03	White-footed Mouse	6.60E-03	1.65E-05
Zinc ^a	2.50E-03	Meadow Vole	6.00E-03	1.50E-05
Zinc ^a	2.50E-03	Cottontail Rabbit	1.16E-01	2.90E-04
Zinc ^a	2.50E-03	Red Fox	3.80E-01	9.50E-04
Zinc ^a	2.50E-03	Raccoon	3.83E-01	9.58E-04
Zinc ^a	2.50E-03	White-tailed Deer	3.70E+00	9.25E-03
Zinc ^a	2.50E-03	American Robin	1.06E-02	2.65E-05
Zinc ^a	2.50E-03	Belted Kingfisher	1.60E-02	4.00E-05
Zinc ^a	2.50E-03	Red-tailed Hawk	6.40E-02	1.60E-04
Zinc ^a	2.50E-03	Great Blue Heron	1.16E-01	2.90E-04
Zinc ^a	2.50E-03	Mallard	7.89E-02	1.97E-04
Notes:				
mg/L - milligrams per liter				
L/day - liter per day				
mg/L/day - milligrams per liter per day				
^a Non-Detect within analytical sampling but evaluated using 1/2 detection limits.				

Table 7-14
Exposure Rate Based on Maximum Concentration of COPEC in Benthic Invertebrates Due to Uptake
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Sediment (mg/kg)	Benthic Invert-Sediment Bioconcentration Factor ^a	Maximum Concentration of COPEC in Benthic Invert (mg/kg)	Representative Wildlife Species	Consumption Rate of Benthic Invertebrates Based on Diet Composition ^c (kg/day)	Dose Received from Benthic Inverts (mg/kg/day)
On-Site Waste Area Sediment						
Arsenic	5.88E+02	9.00E-01	5.29E+02	Raccoon	4.74E-02	2.51E+01
Arsenic	5.88E+02	9.00E-01	5.29E+02	Mallard	8.00E-02	4.23E+01
Cadmium	1.40E+03	3.40E+00	4.76E+03	Raccoon	4.74E-02	2.26E+02
Cadmium	1.40E+03	3.40E+00	4.76E+03	Mallard	8.00E-02	3.81E+02
Lead	8.15E+03	6.30E-01	5.13E+03	Raccoon	4.74E-02	2.43E+02
Lead	8.15E+03	6.30E-01	5.13E+03	Mallard	8.00E-02	4.11E+02
Zinc	4.47E+04	5.70E-01	2.55E+04	Raccoon	4.74E-02	1.21E+03
Zinc	4.47E+04	5.70E-01	2.55E+04	Mallard	8.00E-02	2.04E+03
On-Site Non-Waste Area Sediment						
Arsenic	5.70E+01	9.00E-01	5.13E+01	Raccoon	4.74E-02	2.43E+00
Arsenic	5.70E+01	9.00E-01	5.13E+01	Mallard	8.00E-02	4.10E+00
Cadmium	1.21E+02	3.40E+00	4.11E+02	Raccoon	4.74E-02	1.95E+01
Cadmium	1.21E+02	3.40E+00	4.11E+02	Mallard	8.00E-02	3.29E+01
Lead	9.75E+02	6.30E-01	6.14E+02	Raccoon	4.74E-02	2.91E+01
Lead	9.75E+02	6.30E-01	6.14E+02	Mallard	8.00E-02	4.91E+01
Zinc	7.14E+03	5.70E-01	4.07E+03	Raccoon	4.74E-02	1.93E+02
Zinc	7.14E+03	5.70E-01	4.07E+03	Mallard	8.00E-02	3.26E+02
Off-Site Sediment						
Arsenic	3.41E+02	9.00E-01	3.07E+02	Raccoon	4.74E-02	1.45E+01
Arsenic	3.41E+02	9.00E-01	3.07E+02	Mallard	8.00E-02	2.46E+01
Cadmium	9.87E+02	3.40E+00	3.36E+03	Raccoon	4.74E-02	1.59E+02
Cadmium	9.87E+02	3.40E+00	3.36E+03	Mallard	8.00E-02	2.68E+02
Lead	5.50E+03	6.30E-01	3.47E+03	Raccoon	4.74E-02	1.64E+02
Lead	5.50E+03	6.30E-01	3.47E+03	Mallard	8.00E-02	2.77E+02
Zinc	2.67E+04	5.70E-01	1.52E+04	Raccoon	4.74E-02	7.21E+02
Zinc	2.67E+04	5.70E-01	1.52E+04	Mallard	8.00E-02	1.22E+03

Table 7-14
Exposure Rate Based on Maximum Concentration of COPEC in Benthic Invertebrates Due to Uptake
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Sediment (mg/kg)	Benthic Invert-Sediment Bioconcentration Factor ^a	Maximum Concentration of COPEC in Benthic Invert (mg/kg)	Representative Wildlife Species	Consumption Rate of Benthic Invertebrates Based on Diet Composition ^c (kg/day)	Dose Received from Benthic Inverts (mg/kg/day)
Background Sediment						
Arsenic ^b	5.00E+00	9.00E-01	4.50E+00	Raccoon	4.74E-02	2.13E-01
Arsenic ^b	5.00E+00	9.00E-01	4.50E+00	Mallard	8.00E-02	3.60E-01
Cadmium ^b	5.00E+00	3.40E+00	1.70E+01	Raccoon	4.74E-02	8.06E-01
Cadmium ^b	5.00E+00	3.40E+00	1.70E+01	Mallard	8.00E-02	1.36E+00
Lead ^b	1.00E+01	6.30E-01	6.30E+00	Raccoon	4.74E-02	2.99E-01
Lead ^b	1.00E+01	6.30E-01	6.30E+00	Mallard	8.00E-02	5.04E-01
Zinc	1.80E+02	5.70E-01	1.03E+02	Raccoon	4.74E-02	4.86E+00
Zinc	1.80E+02	5.70E-01	1.03E+02	Mallard	8.00E-02	8.21E+00
Notes: mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Sediment-to-Benthic invertebrate bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Non-Detect within analytical sampling but evaluated using 1/2 detection limits. ^c Consumption rate takes into account that 80% of the mallard duck's diet and 20% of the raccoon's diet is composed of benthic invertebrates.						

Table 7-15
Exposure Rate Based on Maximum Concentration of COPEC in Aquatic Invertebrates Due to Uptake
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Aquatic Invert-Water Bioconcentration Factor ^a	Maximum Concentration of COPEC in Benthic Invert (mg/kg)	Representative Wildlife Species	Consumption Rate of Inverts Based on Diet Composition ^c (kg/day)	Dose Received from Aquatic Invertebrates (mg/kg/day)
On-Site Waste Area (Pond 2 and Mid-Site Ravine Surface Water)						
Arsenic	1.70E-02	7.30E+01	1.24E+00	Mallard	1.00E-02	1.24E-02
Cadmium	1.84E-01	3.46E+03	6.37E+02	Mallard	1.00E-02	6.37E+00
Lead	7.50E-02	5.06E+03	3.79E+02	Mallard	1.00E-02	3.79E+00
Zinc	8.25E+00	4.58E+03	3.78E+04	Mallard	1.00E-02	3.78E+02
On-Site Non-Waste Area (Pond 4 Surface Water)						
Arsenic ^b	5.00E-03	7.30E+01	3.65E-01	Mallard	1.00E-02	3.65E-03
Cadmium	1.60E-02	3.46E+03	5.54E+01	Mallard	1.00E-02	5.54E-01
Lead ^b	5.00E-03	5.06E+03	2.53E+01	Mallard	1.00E-02	2.53E-01
Zinc	1.08E+00	4.58E+03	4.94E+03	Mallard	1.00E-02	4.94E+01
Off-Site Area (Ditches and Drainage Along U.S. Hwy 169 Surface Water)						
Arsenic ^b	5.00E-03	7.30E+01	3.65E-01	Mallard	1.00E-02	3.65E-03
Cadmium	1.98E-01	3.46E+03	6.85E+02	Mallard	1.00E-02	6.85E+00
Lead	2.60E-02	5.06E+03	1.32E+02	Mallard	1.00E-02	1.32E+00
Zinc	8.39E+00	4.58E+03	3.84E+04	Mallard	1.00E-02	3.84E+02
Background Area (City Lake Surface Water)						
Arsenic ^b	5.00E-03	7.30E+01	3.65E-01	Mallard	1.00E-02	3.65E-03
Cadmium ^b	2.50E-03	3.46E+03	8.65E+00	Mallard	1.00E-02	8.65E-02
Lead ^b	5.00E-03	5.06E+03	2.53E+01	Mallard	1.00E-02	2.53E-01
Zinc ^b	2.50E-03	4.58E+03	1.14E+01	Mallard	1.00E-02	1.14E-01
Notes: mg/L - milligrams per liter mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Soil-to-soil bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Non-Detect within analytical sampling but evaluated using 1/2 detection limits. ^c Consumption rate takes into account that 10% of the mallard duck's diet is composed of aquatic invertebrates.						

Table 7-16
Exposure Rate Based on Maximum Concentration of COPEC in Soil Invertebrates Due to Uptake

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Soil Invertebrate-Soil Bioconcentration Factor ^a	Maximum Concentration of COPEC in Soil Invertebrate Due to Uptake (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil Invertebrates Based on Diet Composition ^c (kg/day)	Dose Received from Soil Invertebrates (mg/kg/day)
On-Site Waste Area Soils 0-0.5 ft bgs						
Arsenic	1.17E+03	1.10E-01	1.29E+02	Short-tailed Shrew	9.00E-03	1.16E+00
Arsenic	1.17E+03	1.10E-01	1.29E+02	Meadow Vole	2.50E-03	3.22E-01
Arsenic	1.17E+03	1.10E-01	1.29E+02	Raccoon	4.74E-02	6.10E+00
Arsenic	1.17E+03	1.10E-01	1.29E+02	American Robin	7.44E-02	9.58E+00
Cadmium	1.62E+03	9.60E-01	1.56E+03	Short-tailed Shrew	9.00E-03	1.40E+01
Cadmium	1.62E+03	9.60E-01	1.56E+03	Meadow Vole	2.50E-03	3.89E+00
Cadmium	1.62E+03	9.60E-01	1.56E+03	Raccoon	4.74E-02	7.37E+01
Cadmium	1.62E+03	9.60E-01	1.56E+03	American Robin	7.44E-02	1.16E+02
Lead	7.17E+04	3.00E-02	2.15E+03	Short-tailed Shrew	9.00E-03	1.94E+01
Lead	7.17E+04	3.00E-02	2.15E+03	Meadow Vole	2.50E-03	5.38E+00
Lead	7.17E+04	3.00E-02	2.15E+03	Raccoon	4.74E-02	1.02E+02
Lead	7.17E+04	3.00E-02	2.15E+03	American Robin	7.44E-02	1.60E+02
Zinc	1.65E+05	5.60E-01	9.24E+04	Short-tailed Shrew	9.00E-03	8.32E+02
Zinc	1.65E+05	5.60E-01	9.24E+04	Meadow Vole	2.50E-03	2.31E+02
Zinc	1.65E+05	5.60E-01	9.24E+04	Raccoon	4.74E-02	4.38E+03
Zinc	1.65E+05	5.60E-01	9.24E+04	American Robin	7.44E-02	6.87E+03
On-Site Non-Waste Area Soils 0-0.5 ft bgs						
Arsenic	4.16E+02	1.10E-01	4.58E+01	Short-tailed Shrew	9.00E-03	4.12E-01
Arsenic	4.16E+02	1.10E-01	4.58E+01	Meadow Vole	2.50E-03	1.14E-01
Arsenic	4.16E+02	1.10E-01	4.58E+01	Raccoon	4.74E-02	2.17E+00
Arsenic	4.16E+02	1.10E-01	4.58E+01	American Robin	7.44E-02	3.40E+00
Cadmium	7.99E+02	9.60E-01	7.67E+02	Short-tailed Shrew	9.00E-03	6.90E+00
Cadmium	7.99E+02	9.60E-01	7.67E+02	Meadow Vole	2.50E-03	1.92E+00
Cadmium	7.99E+02	9.60E-01	7.67E+02	Raccoon	4.74E-02	3.64E+01
Cadmium	7.99E+02	9.60E-01	7.67E+02	American Robin	7.44E-02	5.71E+01
Lead	5.17E+03	3.00E-02	1.55E+02	Short-tailed Shrew	9.00E-03	1.40E+00
Lead	5.17E+03	3.00E-02	1.55E+02	Meadow Vole	2.50E-03	3.88E-01
Lead	5.17E+03	3.00E-02	1.55E+02	Raccoon	4.74E-02	7.35E+00
Lead	5.17E+03	3.00E-02	1.55E+02	American Robin	7.44E-02	1.15E+01

Table 7-16
Exposure Rate Based on Maximum Concentration of COPEC in Soil Invertebrates Due to Uptake

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Soil Invertebrate-Soil Bioconcentration Factor ^a	Maximum Concentration of COPEC in Soil Invertebrate Due to Uptake (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil Invertebrates Based on Diet Composition ^c (kg/day)	Dose Received from Soil Invertebrates (mg/kg/day)
Zinc	4.14E+04	5.60E-01	2.32E+04	Short-tailed Shrew	9.00E-03	2.09E+02
Zinc	4.14E+04	5.60E-01	2.32E+04	Meadow Vole	2.50E-03	5.80E+01
Zinc	4.14E+04	5.60E-01	2.32E+04	Raccoon	4.74E-02	1.10E+03
Zinc	4.14E+04	5.60E-01	2.32E+04	American Robin	7.44E-02	1.72E+03
Off-Site Soils Maximums Detected on ODOT Property 0-0.25 ft bgs						
Arsenic	6.50E+02	1.10E-01	7.15E+01	Short-tailed Shrew	9.00E-03	6.44E-01
Arsenic	6.50E+02	1.10E-01	7.15E+01	Meadow Vole	2.50E-03	1.79E-01
Arsenic	6.50E+02	1.10E-01	7.15E+01	Raccoon	4.74E-02	3.39E+00
Arsenic	6.50E+02	1.10E-01	7.15E+01	American Robin	7.44E-02	5.32E+00
Cadmium	1.93E+02	9.60E-01	1.85E+02	Short-tailed Shrew	9.00E-03	1.67E+00
Cadmium	1.93E+02	9.60E-01	1.85E+02	Meadow Vole	2.50E-03	4.63E-01
Cadmium	1.93E+02	9.60E-01	1.85E+02	Raccoon	4.74E-02	8.78E+00
Cadmium	1.93E+02	9.60E-01	1.85E+02	American Robin	7.44E-02	1.38E+01
Lead	1.59E+04	3.00E-02	4.77E+02	Short-tailed Shrew	9.00E-03	4.29E+00
Lead	1.59E+04	3.00E-02	4.77E+02	Meadow Vole	2.50E-03	1.19E+00
Lead	1.59E+04	3.00E-02	4.77E+02	Raccoon	4.74E-02	2.26E+01
Lead	1.59E+04	3.00E-02	4.77E+02	American Robin	7.44E-02	3.55E+01
Zinc	4.25E+04	5.60E-01	2.38E+04	Short-tailed Shrew	9.00E-03	2.14E+02
Zinc	4.25E+04	5.60E-01	2.38E+04	Meadow Vole	2.50E-03	5.95E+01
Zinc	4.25E+04	5.60E-01	2.38E+04	Raccoon	4.74E-02	1.13E+03
Zinc	4.25E+04	5.60E-01	2.38E+04	American Robin	7.44E-02	1.77E+03
Background Soils						
Arsenic	1.60E+01	1.10E-01	1.76E+00	Short-tailed Shrew	9.00E-03	1.58E-02
Arsenic	1.60E+01	1.10E-01	1.76E+00	Meadow Vole	2.50E-03	4.40E-03
Arsenic	1.60E+01	1.10E-01	1.76E+00	Raccoon	4.74E-02	8.34E-02
Arsenic	1.60E+01	1.10E-01	1.76E+00	American Robin	7.44E-02	1.31E-01

Table 7-16
Exposure Rate Based on Maximum Concentration of COPEC in Soil Invertebrates Due to Uptake

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Soil Invertebrate-Soil Bioconcentration Factor ^a	Maximum Concentration of COPEC in Soil Invertebrate Due to Uptake (mg/kg)	Representative Wildlife Species	Consumption Rate of Soil Invertebrates Based on Diet Composition ^c (kg/day)	Dose Received from Soil Invertebrates (mg/kg/day)
Cadmium ^b	5.00E+00	9.60E-01	4.80E+00	Short-tailed Shrew	9.00E-03	4.32E-02
Cadmium ^b	5.00E+00	9.60E-01	4.80E+00	Meadow Vole	2.50E-03	1.20E-02
Cadmium ^b	5.00E+00	9.60E-01	4.80E+00	Raccoon	4.74E-02	2.28E-01
Cadmium ^b	5.00E+00	9.60E-01	4.80E+00	American Robin	7.44E-02	3.57E-01
Lead	2.86E+01	3.00E-02	8.58E-01	Short-tailed Shrew	9.00E-03	7.72E-03
Lead	2.86E+01	3.00E-02	8.58E-01	Meadow Vole	2.50E-03	2.15E-03
Lead	2.86E+01	3.00E-02	8.58E-01	Raccoon	4.74E-02	4.07E-02
Lead	2.86E+01	3.00E-02	8.58E-01	American Robin	7.44E-02	6.38E-02
Zinc	1.96E+02	5.60E-01	1.10E+02	Short-tailed Shrew	9.00E-03	9.88E-01
Zinc	1.96E+02	5.60E-01	1.10E+02	Meadow Vole	2.50E-03	2.74E-01
Zinc	1.96E+02	5.60E-01	1.10E+02	Raccoon	4.74E-02	5.20E+00
Zinc	1.96E+02	5.60E-01	1.10E+02	American Robin	7.44E-02	8.17E+00
Notes: COPEC - Chemical of Potential Ecological Concern mg/kg - milligrams per kilogram ^a Soil-to-soil invertebrate bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Non-Detect within analytical sampling but evaluated using 1/2 detection limits. ^c Consumption rate takes into account that 50% of the meadow vole's diet, 80% of the American robin's diet, and 20% of the raccoon's diet is composed of soil invertebrates.						

Table 7-17

Exposure Rate Based on Maximum Concentration of COPEC in Aquatic Plants Due to Uptake

*Remedial investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	Maximum Concentration Detected in Sediment (mg/kg)	Plant-Sediment Bioconcentration Factor ^a	Maximum Concentration of COPEC in Aquatic Plant (mg/kg)	Representative Wildlife Species	Consumption Rate of Aquatic Plants Based on Diet Composition ^c (kg/day)	Dose Received from Aquatic Plants (mg/kg/day)
Maximum Detect On-Site Waste Area Sediments (Pond 1 and Mid-Site Ravine Sediments)						
Arsenic	5.88E+02	3.60E-02	2.12E+01	Mallard	1.00E-02	2.12E-01
Cadmium	1.40E+03	3.64E-01	5.10E+02	Mallard	1.00E-02	5.10E+00
Lead	8.15E+03	4.50E-02	3.67E+02	Mallard	1.00E-02	3.67E+00
Zinc	4.47E+04	1.20E-12	5.36E-08	Mallard	1.00E-02	5.36E-10
Maximum Detect On-Site Non-Waste Area Sediment (Pond 4 Sediment)						
Arsenic	5.70E+01	3.60E-02	2.05E+00	Mallard	1.00E-02	2.05E-02
Cadmium	1.21E+02	3.64E-01	4.40E+01	Mallard	1.00E-02	4.40E-01
Lead	9.75E+02	4.50E-02	4.39E+01	Mallard	1.00E-02	4.39E-01
Zinc	7.14E+03	1.20E-12	8.57E-09	Mallard	1.00E-02	8.57E-11
Maximum Detected Off-Site Sediment (Ditches East of Railroad Tracks Sediment)						
Arsenic	3.41E+02	3.60E-02	1.23E+01	Mallard	1.00E-02	1.23E-01
Cadmium	9.87E+02	3.64E-01	3.59E+02	Mallard	1.00E-02	3.59E+00
Lead	5.50E+03	4.50E-02	2.48E+02	Mallard	1.00E-02	2.48E+00
Zinc	2.67E+04	1.20E-12	3.20E-08	Mallard	1.00E-02	3.20E-10
Maximum Detected Background Sediment (City Lake Sediment)						
Arsenic ^b	5.00E+00	3.60E-02	1.80E-01	Mallard	1.00E-02	1.80E-03
Cadmium ^b	5.00E+00	3.64E-01	1.82E+00	Mallard	1.00E-02	1.82E-02
Lead ^b	1.00E+01	4.50E-02	4.50E-01	Mallard	1.00E-02	4.50E-03
Zinc	1.80E+02	1.20E-12	2.16E-10	Mallard	1.00E-02	2.16E-12
Notes: mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Soil-to-Plant and Sediment-to-plant bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Non-Detect within analytical sampling but evaluated using 1/2 detection limits. ^c Consumption rate takes into account that 10% of the mallard duck's diet is composed of aquatic plants.						

Table 7-18
Chemical Intake from Ingestion of Forage Plants Based on
Maximum Concentration Detected in Blackberry Plants from the
On-Site Waste, Off-Site, and Background Areas
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Blackberry Plant (mg/kg)	Representative Wildlife Species	Consumption Rate of Forage Plants Based on Diet Composition ^a (kg/day)	Dose Received from Forage Plants (mg/kg/day)
On-site Waste Area Blackberry Samples				
Arsenic	8.50E+00	White-footed Mouse	3.40E-03	2.89E-02
Arsenic	8.50E+00	Meadow Vole	2.50E-03	2.13E-02
Arsenic	8.50E+00	Cottontail Rabbit	2.37E-01	2.01E+00
Arsenic	8.50E+00	Raccoon	4.74E-02	4.03E-01
Arsenic	8.50E+00	White-tailed Deer	1.74E+00	1.48E+01
Arsenic	8.50E+00	American Robin	1.86E-02	1.58E-01
Cadmium	2.90E+00	White-footed Mouse	3.40E-03	9.86E-03
Cadmium	2.90E+00	Meadow Vole	2.50E-03	7.25E-03
Cadmium	2.90E+00	Cottontail Rabbit	2.37E-01	6.87E-01
Cadmium	2.90E+00	Raccoon	4.74E-02	1.37E-01
Cadmium	2.90E+00	White-tailed Deer	1.74E+00	5.05E+00
Cadmium	2.90E+00	American Robin	1.86E-02	5.39E-02
Lead	4.89E+02	White-footed Mouse	3.40E-03	1.66E+00
Lead	4.89E+02	Meadow Vole	2.50E-03	1.22E+00
Lead	4.89E+02	Cottontail Rabbit	2.37E-01	1.16E+02
Lead	4.89E+02	Raccoon	4.74E-02	2.32E+01
Lead	4.89E+02	White-tailed Deer	1.74E+00	8.51E+02
Lead	4.89E+02	American Robin	1.86E-02	9.10E+00
Zinc	5.99E+02	White-footed Mouse	3.40E-03	2.04E+00
Zinc	5.99E+02	Meadow Vole	2.50E-03	1.50E+00
Zinc	5.99E+02	Cottontail Rabbit	2.37E-01	1.42E+02
Zinc	5.99E+02	Raccoon	4.74E-02	2.84E+01
Zinc	5.99E+02	White-tailed Deer	1.74E+00	1.04E+03
Zinc	5.99E+02	American Robin	1.86E-02	1.11E+01
Off-site Blackberry Samples				
Arsenic	1.70E-01	White-footed Mouse	3.40E-03	5.78E-04
Arsenic	1.70E-01	Meadow Vole	2.50E-03	4.25E-04
Arsenic	1.70E-01	Cottontail Rabbit	2.37E-01	4.03E-02
Arsenic	1.70E-01	Raccoon	4.74E-02	8.06E-03
Arsenic	1.70E-01	White-tailed Deer	1.74E+00	2.96E-01
Arsenic	1.70E-01	American Robin	1.86E-02	3.16E-03
Cadmium	5.60E-01	White-footed Mouse	3.40E-03	1.90E-03
Cadmium	5.60E-01	Meadow Vole	2.50E-03	1.40E-03
Cadmium	5.60E-01	Cottontail Rabbit	2.37E-01	1.33E-01
Cadmium	5.60E-01	Raccoon	4.74E-02	2.65E-02
Cadmium	5.60E-01	White-tailed Deer	1.74E+00	9.74E-01
Cadmium	5.60E-01	American Robin	1.86E-02	1.04E-02
Lead	4.30E+00	White-footed Mouse	3.40E-03	1.46E-02

Table 7-18
Chemical Intake from Ingestion of Forage Plants Based on
Maximum Concentration Detected in Blackberry Plants from the
On-Site Waste, Off-Site, and Background Areas
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Blackberry Plant (mg/kg)	Representative Wildlife Species	Consumption Rate of Forage Plants Based on Diet Composition ^a (kg/day)	Dose Received from Forage Plants (mg/kg/day)
Lead	4.30E+00	Meadow Vole	2.50E-03	1.08E-02
Lead	4.30E+00	Cottontail Rabbit	2.37E-01	1.02E+00
Lead	4.30E+00	Raccoon	4.74E-02	2.04E-01
Lead	4.30E+00	White-tailed Deer	1.74E+00	7.48E+00
Lead	4.30E+00	American Robin	1.86E-02	8.00E-02
Zinc	1.25E+02	White-footed Mouse	3.40E-03	4.25E-01
Zinc	1.25E+02	Meadow Vole	2.50E-03	3.13E-01
Zinc	1.25E+02	Cottontail Rabbit	2.37E-01	2.96E+01
Zinc	1.25E+02	Raccoon	4.74E-02	5.93E+00
Zinc	1.25E+02	White-tailed Deer	1.74E+00	2.18E+02
Zinc	1.25E+02	American Robin	1.86E-02	2.33E+00
Background Blackberry Samples				
Arsenic	1.50E-01	White-footed Mouse	3.40E-03	5.10E-04
Arsenic	1.50E-01	Meadow Vole	2.50E-03	3.75E-04
Arsenic	1.50E-01	Cottontail Rabbit	2.37E-01	3.56E-02
Arsenic	1.50E-01	Raccoon	4.74E-02	7.11E-03
Arsenic	1.50E-01	White-tailed Deer	1.74E+00	2.61E-01
Arsenic	1.50E-01	American Robin	1.86E-02	2.79E-03
Cadmium	3.50E-02	White-footed Mouse	3.40E-03	1.19E-04
Cadmium	3.50E-02	Meadow Vole	2.50E-03	8.75E-05
Cadmium	3.50E-02	Cottontail Rabbit	2.37E-01	8.30E-03
Cadmium	3.50E-02	Raccoon	4.74E-02	1.66E-03
Cadmium	3.50E-02	White-tailed Deer	1.74E+00	6.09E-02
Cadmium	3.50E-02	American Robin	1.86E-02	6.51E-04
Lead	9.30E+00	White-footed Mouse	3.40E-03	3.16E-02
Lead	9.30E+00	Meadow Vole	2.50E-03	2.33E-02
Lead	9.30E+00	Cottontail Rabbit	2.37E-01	2.20E+00
Lead	9.30E+00	Raccoon	4.74E-02	4.41E-01
Lead	9.30E+00	White-tailed Deer	1.74E+00	1.62E+01
Lead	9.30E+00	American Robin	1.86E-02	1.73E-01
Zinc	1.71E+01	White-footed Mouse	3.40E-03	5.81E-02
Zinc	1.71E+01	Meadow Vole	2.50E-03	4.28E-02
Zinc	1.71E+01	Cottontail Rabbit	2.37E-01	4.05E+00
Zinc	1.71E+01	Raccoon	4.74E-02	8.11E-01
Zinc	1.71E+01	White-tailed Deer	1.74E+00	2.98E+01
Zinc	1.71E+01	American Robin	1.86E-02	3.18E-01
Notes: COPEC - Chemical of potential concern mg/kg - milligrams per kilogram				

Table 7-18
Chemical Intake from Ingestion of Forage Plants Based on
Maximum Concentration Detected in Blackberry Plants from the
On-Site Waste, Off-Site, and Background Areas
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Blackberry Plant (mg/kg)	Representative Wildlife Species	Consumption Rate of Forage Plants Based on Diet Composition ^a (kg/day)	Dose Received from Forage Plants (mg/kg/day)
kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Consumption rate takes into account that 50% of the meadow vole's diet, 20% of the American robin's diet, and 20% of the raccoon's diet is composed of vegetation.				

Table 7-19
Exposure Rate Based on Maximum Concentration of COPEC in Plants from the On-Site Non-Waste Area Due to Uptake

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Parameter	Maximum Concentration Detected in Soil (mg/kg)	Plant Bioconcentration Factor ^a	Maximum Concentration of COPEC in Plants Due to Uptake (mg/kg)	Representative Wildlife Species	Consumption Rate of Plants Based on Diet Composition ^b (kg/day)	Dose Received from Plants (mg/kg/day)
On-Site Non-Waste Area Soils 0-0.5 ft bgs						
Arsenic	4.16E+02	3.60E-02	1.50E+01	White-footed Mouse	3.40E-03	5.09E-02
Arsenic	4.16E+02	3.60E-02	1.50E+01	Meadow Vole	2.50E-03	3.74E-02
Arsenic	4.16E+02	3.60E-02	1.50E+01	Cottontail Rabbit	2.37E-01	3.55E+00
Arsenic	4.16E+02	3.60E-02	1.50E+01	Raccoon	4.74E-02	7.10E-01
Arsenic	4.16E+02	3.60E-02	1.50E+01	White-tailed Deer	1.74E+00	2.61E+01
Arsenic	4.16E+02	3.60E-02	1.50E+01	American Robin	1.86E-02	2.79E-01
Cadmium	7.99E+02	3.64E-01	2.91E+02	White-footed Mouse	3.40E-03	9.89E-01
Cadmium	7.99E+02	3.64E-01	2.91E+02	Meadow Vole	2.50E-03	7.27E-01
Cadmium	7.99E+02	3.64E-01	2.91E+02	Cottontail Rabbit	2.37E-01	6.89E+01
Cadmium	7.99E+02	3.64E-01	2.91E+02	Raccoon	4.74E-02	1.38E+01
Cadmium	7.99E+02	3.64E-01	2.91E+02	White-tailed Deer	1.74E+00	5.06E+02
Cadmium	7.99E+02	3.64E-01	2.91E+02	American Robin	1.86E-02	5.41E+00
Lead	5.17E+03	4.50E-02	2.33E+02	White-footed Mouse	3.40E-03	7.91E-01
Lead	5.17E+03	4.50E-02	2.33E+02	Meadow Vole	2.50E-03	5.82E-01
Lead	5.17E+03	4.50E-02	2.33E+02	Cottontail Rabbit	2.37E-01	5.51E+01
Lead	5.17E+03	4.50E-02	2.33E+02	Raccoon	4.74E-02	1.10E+01
Lead	5.17E+03	4.50E-02	2.33E+02	White-tailed Deer	1.74E+00	4.05E+02
Lead	5.17E+03	4.50E-02	2.33E+02	American Robin	1.86E-02	4.33E+00
Zinc	4.14E+04	1.20E-12	4.97E-08	White-footed Mouse	3.40E-03	1.69E-10
Zinc	4.14E+04	1.20E-12	4.97E-08	Meadow Vole	2.50E-03	1.24E-10
Zinc	4.14E+04	1.20E-12	4.97E-08	Cottontail Rabbit	2.37E-01	1.18E-08
Zinc	4.14E+04	1.20E-12	4.97E-08	Raccoon	4.74E-02	2.35E-09
Zinc	4.14E+04	1.20E-12	4.97E-08	White-tailed Deer	1.74E+00	8.64E-08
Zinc	4.14E+04	1.20E-12	4.97E-08	American Robin	1.86E-02	9.24E-10
Notes: COPEC - Chemical of Potential Ecological Concern mg/kg - milligrams per kilogram ^a Soil-to-plant bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Consumption rate takes into account that 1/2 of the meadow vole's diet, 1/2 of the American robin's diet, and 1/5 of the raccoon's diet is composed of vegetation.						

Table 7-20
Chemical Intake from Ingestion of Fish Based on Maximum
Concentration Detected in Fish From the Strip Mine Pit (Historic Data)
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Fish From Strip Mine Pit ^a (mg/kg)	Representative Wildlife Species	Consumption Rate of food (kg/day)	Dose Received from Consumed Whole Fish (mg/kg/day)
Arsenic	4.35E-01	Raccoon	2.37E-01	0.103095
Arsenic	4.35E-01	Great Blue Heron	4.20E-01	0.1827
Arsenic	4.35E-01	Belted Kingfisher	7.50E-02	0.032625
Cadmium	2.18E-01	Raccoon	2.37E-01	0.0515475
Cadmium	2.18E-01	Great Blue Heron	4.20E-01	0.09135
Cadmium	2.18E-01	Belted Kingfisher	7.50E-02	0.0163125
Lead	1.31E-01	Raccoon	2.37E-01	0.0309285
Lead	1.31E-01	Great Blue Heron	4.20E-01	0.05481
Lead	1.31E-01	Belted Kingfisher	7.50E-02	0.0097875
Zinc	1.81E+01	Raccoon	2.37E-01	4.2897
Zinc	1.81E+01	Great Blue Heron	4.20E-01	7.602
Zinc	1.81E+01	Belted Kingfisher	7.50E-02	1.3575
Notes: mg/kg - milligrams per kilograms kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Maximum concentration detected in fish tissue samples from the Strip Mine Pit as reported in the USEPA's <i>Removal Action Assessment Report for Tulsa Fuel manufacturing Site, Collinsville, Tulsa County, Oklahoma</i> dated May 14, 1999.				

Table 7-21
Exposure Rate Based on Maximum Concentration of COPEC in Fish from the Off-Site and Background
Areas Due to Uptake
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration Detected in Surface Water (mg/L)	Surface Water to Fish Bioconcentration Factor ^a	Maximum Concentration of COPEC in Fish (mg/kg)	Representative Wildlife Species	Consumption Rate of Fish ^c (kg/day)	Dose Received from Consumed Whole Fish (mg/kg/day)
Off-Site Surface Water						
Arsenic ²	5.00E-03	1.14E+02	5.70E-01	Raccoon	4.74E-02	2.70E-02
Arsenic ²	5.00E-03	1.14E+02	5.70E-01	Great Blue Heron	4.20E-01	2.39E-01
Arsenic ²	5.00E-03	1.14E+02	5.70E-01	Belted Kingfisher	7.50E-02	4.28E-02
Cadmium	1.98E-01	9.07E+02	1.80E+02	Raccoon	4.74E-02	8.51E+00
Cadmium	1.98E-01	9.07E+02	1.80E+02	Great Blue Heron	4.20E-01	7.54E+01
Cadmium	1.98E-01	9.07E+02	1.80E+02	Belted Kingfisher	7.50E-02	1.35E+01
Lead	2.60E-02	9.00E-02	2.34E-03	Raccoon	4.74E-02	1.11E-04
Lead	2.60E-02	9.00E-02	2.34E-03	Great Blue Heron	4.20E-01	9.83E-04
Lead	2.60E-02	9.00E-02	2.34E-03	Belted Kingfisher	7.50E-02	1.76E-04
Zinc	8.39E+00	2.06E+03	1.73E+04	Raccoon	4.74E-02	8.19E+02
Zinc	8.39E+00	2.06E+03	1.73E+04	Great Blue Heron	4.20E-01	7.26E+03
Zinc	8.39E+00	2.06E+03	1.73E+04	Belted Kingfisher	7.50E-02	1.30E+03
Background Surface Water						
Arsenic ^b	5.00E-03	1.14E+02	5.70E-01	Raccoon	4.74E-02	2.70E-02
Arsenic ^b	5.00E-03	1.14E+02	5.70E-01	Great Blue Heron	4.20E-01	2.39E-01
Arsenic ^b	5.00E-03	1.14E+02	5.70E-01	Belted Kingfisher	7.50E-02	4.28E-02
Cadmium ^b	2.50E-03	9.07E+02	2.27E+00	Raccoon	4.74E-02	1.07E-01
Cadmium ^b	2.50E-03	9.07E+02	2.27E+00	Great Blue Heron	4.20E-01	9.52E-01
Cadmium ^b	2.50E-03	9.07E+02	2.27E+00	Belted Kingfisher	7.50E-02	1.70E-01
Lead ^b	5.00E-03	9.00E-02	4.50E-04	Raccoon	4.74E-02	2.13E-05
Lead ^b	5.00E-03	9.00E-02	4.50E-04	Great Blue Heron	4.20E-01	1.89E-04
Lead ^b	5.00E-03	9.00E-02	4.50E-04	Belted Kingfisher	7.50E-02	3.38E-05
Zinc ^b	2.50E-03	2.06E+03	5.15E+00	Raccoon	4.74E-02	2.44E-01
Zinc ^b	2.50E-03	2.06E+03	5.15E+00	Great Blue Heron	4.20E-01	2.16E+00
Zinc ^b	2.50E-03	2.06E+03	5.15E+00	Belted Kingfisher	7.50E-02	3.86E-01
Notes: mg/kg - milligrams per kilograms kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Surface Water-to-Fish bioconcentration factors as reported in USEPA (1999b; EPA 530-D-99-001A) ^b Non-Detect within analytical sampling but evaluated using 1/2 detection limits. Dose Received from Consumed Fish = Maximum Concentration Detected in Fish x Consumption Rate of Fish ^c Consumption rate takes into account that 1/5 of the raccoon's diet is composed of fish.						

Table 7-22
Chemical Intake Based on Ingestion of Small Mammal Prey by
Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration per Day Estimated in Small Mammal Prey (mg/kg) ^a	Representative Wildlife Species	Consumption Rate of Small Mammal Prey ^b (kg/day)	Dose Received from Small Mammal Prey (mg/kg/day)
On-Site Waste Area				
Arsenic	1.94E+01	Red Fox	0.45	8.75E+00
Arsenic	1.94E+01	Raccoon	0.0474	9.22E-01
Arsenic	1.94E+01	Red-tailed Hawk	0.109	2.12E+00
Cadmium	2.48E+01	Red Fox	0.45	1.12E+01
Cadmium	2.48E+01	Raccoon	0.0474	1.18E+00
Cadmium	2.48E+01	Red-tailed Hawk	0.109	2.71E+00
Lead	1.18E+03	Red Fox	0.45	5.33E+02
Lead	1.18E+03	Raccoon	0.0474	5.61E+01
Lead	1.18E+03	Red-tailed Hawk	0.109	1.29E+02
Zinc	2.60E+03	Red Fox	0.45	1.17E+03
Zinc	2.60E+03	Raccoon	0.0474	1.23E+02
Zinc	2.60E+03	Red-tailed Hawk	0.109	2.84E+02
On-Site Non-Waste Area				
Arsenic	9.75E+00	Red Fox	0.45	4.39E+00
Arsenic	9.75E+00	Raccoon	0.0474	4.62E-01
Arsenic	9.75E+00	Red-tailed Hawk	0.109	1.06E+00
Cadmium	8.08E+01	Red Fox	0.45	3.64E+01
Cadmium	8.08E+01	Raccoon	0.0474	3.83E+00
Cadmium	8.08E+01	Red-tailed Hawk	0.109	8.81E+00
Lead	1.32E+02	Red Fox	0.45	5.95E+01
Lead	1.32E+02	Raccoon	0.0474	6.26E+00
Lead	1.32E+02	Red-tailed Hawk	0.109	1.44E+01
Zinc	6.17E+02	Red Fox	0.45	2.78E+02
Zinc	6.17E+02	Raccoon	0.0474	2.92E+01
Zinc	6.17E+02	Red-tailed Hawk	0.109	6.73E+01
Off-Site Area				
Arsenic	9.73E+00	Red Fox	0.45	4.38E+00
Arsenic	9.73E+00	Raccoon	0.0474	4.61E-01
Arsenic	9.73E+00	Red-tailed Hawk	0.109	1.06E+00
Cadmium	3.03E+00	Red Fox	0.45	1.36E+00
Cadmium	3.03E+00	Raccoon	0.0474	1.44E-01
Cadmium	3.03E+00	Red-tailed Hawk	0.109	3.30E-01
Lead	2.38E+02	Red Fox	0.45	1.07E+02
Lead	2.38E+02	Raccoon	0.0474	1.13E+01
Lead	2.38E+02	Red-tailed Hawk	0.109	2.59E+01
Zinc	6.64E+02	Red Fox	0.45	2.99E+02
Zinc	6.64E+02	Raccoon	0.0474	3.15E+01
Zinc	6.64E+02	Red-tailed Hawk	0.109	7.24E+01

Table 7-22
Chemical Intake Based on Ingestion of Small Mammal Prey by
Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Maximum Concentration per Day Estimated in Small Mammal Prey (mg/kg) ^a	Representative Wildlife Species	Consumption Rate of Small Mammal Prey ^b (kg/day)	Dose Received from Small Mammal Prey (mg/kg/day)
Background				
Arsenic	2.75E-01	Red Fox	0.45	1.24E-01
Arsenic	2.75E-01	Raccoon	0.0474	1.30E-02
Arsenic	2.75E-01	Red-tailed Hawk	0.109	2.99E-02
Cadmium	8.31E-02	Red Fox	0.45	3.74E-02
Cadmium	8.31E-02	Raccoon	0.0474	3.94E-03
Cadmium	8.31E-02	Red-tailed Hawk	0.109	9.06E-03
Lead	2.63E+00	Red Fox	0.45	1.18E+00
Lead	2.63E+00	Raccoon	0.0474	1.25E-01
Lead	2.63E+00	Red-tailed Hawk	0.109	2.87E-01
Zinc	6.97E+00	Red Fox	0.45	3.14E+00
Zinc	6.97E+00	Raccoon	0.0474	3.31E-01
Zinc	6.97E+00	Red-tailed Hawk	0.109	7.60E-01
Notes: mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day ^a Value taken from small mammal species on Table 7-18. ^b Consumption rate takes into account that 1/5 of the raccoon's diet is composed of small mammal prey species.				

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
On-Site Waste Area												
Arsenic	Short-tailed Shrew	1.37E+00	0.00E+00	5.61E-05	0.00E+00	0.00E+00	1.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.53E+00
Arsenic	White-footed Mouse	7.96E-02	0.00E+00	1.12E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.89E-02	0.00E+00	0.00E+00	1.09E-01
Arsenic	Meadow Vole	1.40E-01	0.00E+00	1.02E-04	0.00E+00	0.00E+00	3.22E-01	0.00E+00	2.13E-02	0.00E+00	0.00E+00	4.84E-01
Arsenic	Cottontail Rabbit	1.74E+01	0.00E+00	1.97E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E+00	0.00E+00	0.00E+00	1.94E+01
Arsenic	Red Fox	1.47E+01	0.00E+00	6.46E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.75E+00	2.35E+01
Arsenic	Raccoon	1.30E+01	6.53E+00	6.51E-03	2.51E+01	0.00E+00	6.10E+00	0.00E+00	4.03E-01	2.06E-02	9.22E-01	5.21E+01
Arsenic	White-tailed Deer	4.10E+01	0.00E+00	6.29E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E+01	0.00E+00	0.00E+00	5.58E+01
Arsenic	American Robin	1.02E+01	0.00E+00	1.80E-04	0.00E+00	0.00E+00	9.58E+00	0.00E+00	1.58E-01	0.00E+00	0.00E+00	2.00E+01
Arsenic	Belted Kingfisher	0.00E+00	0.00E+00	2.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.26E-02	0.00E+00	3.29E-02
Arsenic	Red-tailed Hawk	3.57E+00	0.00E+00	1.09E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E+00	5.69E+00
Arsenic	Great Blue Heron	0.00E+00	2.35E+01	1.97E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-01	0.00E+00	2.37E+01
Arsenic	Mallard	0.00E+00	1.18E+00	1.34E-03	4.23E+01	1.24E-02	0.00E+00	2.12E-01	0.00E+00	0.00E+00	0.00E+00	4.37E+01
Cadmium	Short-tailed Shrew	1.90E+00	0.00E+00	6.07E-04	0.00E+00	0.00E+00	1.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E+01
Cadmium	White-footed Mouse	1.10E-01	0.00E+00	1.21E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.86E-03	0.00E+00	0.00E+00	1.21E-01
Cadmium	Meadow Vole	1.94E-01	0.00E+00	1.10E-03	0.00E+00	0.00E+00	3.89E+00	0.00E+00	7.25E-03	0.00E+00	0.00E+00	4.09E+00
Cadmium	Cottontail Rabbit	2.41E+01	0.00E+00	2.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.87E-01	0.00E+00	0.00E+00	2.48E+01
Cadmium	Red Fox	2.04E+01	0.00E+00	6.99E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E+01	3.17E+01
Cadmium	Raccoon	1.80E+01	1.55E+01	7.05E-02	2.26E+02	0.00E+00	7.37E+01	0.00E+00	1.37E-01	1.03E-02	1.18E+00	3.34E+02
Cadmium	White-tailed Deer	5.67E+01	0.00E+00	6.81E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.05E+00	0.00E+00	0.00E+00	6.24E+01
Cadmium	American Robin	1.42E+01	0.00E+00	1.95E-03	0.00E+00	0.00E+00	1.16E+02	0.00E+00	5.39E-02	0.00E+00	0.00E+00	1.30E+02
Cadmium	Belted Kingfisher	0.00E+00	0.00E+00	2.94E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.63E-02	0.00E+00	1.93E-02
Cadmium	Red-tailed Hawk	4.94E+00	0.00E+00	1.18E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E+00	7.66E+00
Cadmium	Great Blue Heron	0.00E+00	5.60E+01	2.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.14E-02	0.00E+00	5.61E+01
Cadmium	Mallard	0.00E+00	2.80E+00	1.45E-02	3.81E+02	6.37E+00	0.00E+00	5.10E+00	0.00E+00	0.00E+00	0.00E+00	3.95E+02
Lead	Short-tailed Shrew	8.39E+01	0.00E+00	2.48E-04	0.00E+00	0.00E+00	1.94E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E+02
Lead	White-footed Mouse	4.88E+00	0.00E+00	4.95E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E+00	0.00E+00	0.00E+00	6.54E+00
Lead	Meadow Vole	8.60E+00	0.00E+00	4.50E-04	0.00E+00	0.00E+00	5.38E+00	0.00E+00	1.22E+00	0.00E+00	0.00E+00	1.52E+01
Lead	Cottontail Rabbit	1.07E+03	0.00E+00	8.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E+02	0.00E+00	0.00E+00	1.18E+03
Lead	Red Fox	9.03E+02	0.00E+00	2.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.33E+02	1.44E+03
Lead	Raccoon	7.96E+02	9.05E+01	2.87E-02	2.43E+02	0.00E+00	1.02E+02	0.00E+00	2.32E+01	6.19E-03	5.61E+01	1.31E+03
Lead	White-tailed Deer	2.51E+03	0.00E+00	2.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.51E+02	0.00E+00	0.00E+00	3.36E+03

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
Lead	American Robin	6.27E+02	0.00E+00	7.95E-04	0.00E+00	0.00E+00	1.60E+02	0.00E+00	9.10E+00	0.00E+00	0.00E+00	7.96E+02
Lead	Belted Kingfisher	0.00E+00	0.00E+00	1.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.79E-03	0.00E+00	1.10E-02
Lead	Red-tailed Hawk	2.19E+02	0.00E+00	4.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+02	3.48E+02
Lead	Great Blue Heron	0.00E+00	3.26E+02	8.69E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-02	0.00E+00	3.26E+02
Lead	Mallard	0.00E+00	1.63E+01	5.92E-03	4.11E+02	3.79E+00	0.00E+00	3.67E+00	0.00E+00	0.00E+00	0.00E+00	4.35E+02
Zinc	Short-tailed Shrew	1.93E+02	0.00E+00	2.72E-02	0.00E+00	0.00E+00	8.32E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+03
Zinc	White-footed Mouse	1.12E+01	0.00E+00	5.45E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E+00	0.00E+00	0.00E+00	1.33E+01
Zinc	Meadow Vole	1.98E+01	0.00E+00	4.95E-02	0.00E+00	0.00E+00	2.31E+02	0.00E+00	1.50E+00	0.00E+00	0.00E+00	2.52E+02
Zinc	Cottontail Rabbit	2.46E+03	0.00E+00	9.57E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E+02	0.00E+00	0.00E+00	2.60E+03
Zinc	Red Fox	2.08E+03	0.00E+00	3.14E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E+03	3.25E+03
Zinc	Raccoon	1.83E+03	4.96E+02	3.16E+00	1.21E+03	0.00E+00	4.38E+03	0.00E+00	2.84E+01	8.58E-01	1.23E+02	8.07E+03
Zinc	White-tailed Deer	5.78E+03	0.00E+00	3.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E+03	0.00E+00	0.00E+00	6.85E+03
Zinc	American Robin	1.44E+03	0.00E+00	8.75E-02	0.00E+00	0.00E+00	6.87E+03	0.00E+00	1.11E+01	0.00E+00	0.00E+00	8.32E+03
Zinc	Belted Kingfisher	0.00E+00	0.00E+00	1.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E+00	0.00E+00	1.49E+00
Zinc	Red-tailed Hawk	5.04E+02	0.00E+00	5.28E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E+02	7.88E+02
Zinc	Great Blue Heron	0.00E+00	1.79E+03	9.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.60E+00	0.00E+00	1.80E+03
Zinc	Mallard	0.00E+00	8.94E+01	6.51E-01	2.04E+03	3.78E+02	0.00E+00	5.36E-10	0.00E+00	0.00E+00	0.00E+00	2.51E+03
On-Site Non-Waste Area												
Arsenic	Short-tailed Shrew	4.87E-01	0.00E+00	1.65E-05	0.00E+00	0.00E+00	4.12E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.99E-01
Arsenic	White-footed Mouse	2.83E-02	0.00E+00	3.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-02	0.00E+00	0.00E+00	7.92E-02
Arsenic	Meadow Vole	4.99E-02	0.00E+00	3.00E-05	0.00E+00	0.00E+00	1.14E-01	0.00E+00	3.74E-02	0.00E+00	0.00E+00	2.02E-01
Arsenic	Cottontail Rabbit	6.20E+00	0.00E+00	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.55E+00	0.00E+00	0.00E+00	9.75E+00
Arsenic	Red Fox	5.24E+00	0.00E+00	1.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.39E+00	9.63E+00
Arsenic	Raccoon	4.62E+00	6.33E-01	1.92E-03	2.43E+00	0.00E+00	2.17E+00	0.00E+00	7.10E-01	0.00E+00	4.62E-01	1.10E+01
Arsenic	White-tailed Deer	1.46E+01	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E+01	0.00E+00	0.00E+00	4.06E+01
Arsenic	American Robin	3.64E+00	0.00E+00	5.30E-05	0.00E+00	0.00E+00	3.40E+00	0.00E+00	2.79E-01	0.00E+00	0.00E+00	7.31E+00
Arsenic	Red-tailed Hawk	1.27E+00	0.00E+00	3.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E+00	2.33E+00
Arsenic	Mallard	0.00E+00	1.14E-01	3.94E-04	4.10E+00	3.65E-03	0.00E+00	2.05E-02	0.00E+00	0.00E+00	0.00E+00	4.24E+00
Cadmium	Short-tailed Shrew	9.35E-01	0.00E+00	5.28E-05	0.00E+00	0.00E+00	6.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.84E+00
Cadmium	White-footed Mouse	5.43E-02	0.00E+00	1.06E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.89E-01	0.00E+00	0.00E+00	1.04E+00
Cadmium	Meadow Vole	9.59E-02	0.00E+00	9.60E-05	0.00E+00	0.00E+00	1.92E+00	0.00E+00	7.27E-01	0.00E+00	0.00E+00	2.74E+00
Cadmium	Cottontail Rabbit	1.19E+01	0.00E+00	1.86E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.89E+01	0.00E+00	0.00E+00	8.08E+01

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
Cadmium	Red Fox	1.01E+01	0.00E+00	6.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.64E+01	4.64E+01
Cadmium	Raccoon	8.87E+00	1.34E+00	6.13E-03	1.95E+01	0.00E+00	3.64E+01	0.00E+00	1.38E+01	0.00E+00	3.83E+00	8.37E+01
Cadmium	White-tailed Deer	2.80E+01	0.00E+00	5.92E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.06E+02	0.00E+00	0.00E+00	5.34E+02
Cadmium	American Robin	6.98E+00	0.00E+00	1.70E-04	0.00E+00	0.00E+00	5.71E+01	0.00E+00	5.41E+00	0.00E+00	0.00E+00	6.95E+01
Cadmium	Red-tailed Hawk	2.44E+00	0.00E+00	1.02E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.81E+00	1.13E+01
Cadmium	Mallard	0.00E+00	2.42E-01	1.26E-03	3.29E+01	5.54E-01	0.00E+00	4.40E-01	0.00E+00	0.00E+00	0.00E+00	3.41E+01
Lead	Short-tailed Shrew	6.05E+00	0.00E+00	1.65E-05	0.00E+00	0.00E+00	1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.44E+00
Lead	White-footed Mouse	3.52E-01	0.00E+00	3.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.91E-01	0.00E+00	0.00E+00	1.14E+00
Lead	Meadow Vole	6.20E-01	0.00E+00	3.00E-05	0.00E+00	0.00E+00	3.88E-01	0.00E+00	5.82E-01	0.00E+00	0.00E+00	1.59E+00
Lead	Cottontail Rabbit	7.70E+01	0.00E+00	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E+01	0.00E+00	0.00E+00	1.32E+02
Lead	Red Fox	6.51E+01	0.00E+00	1.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.95E+01	1.25E+02
Lead	Raccoon	5.74E+01	1.08E+01	1.92E-03	2.91E+01	0.00E+00	7.35E+00	0.00E+00	1.10E+01	0.00E+00	6.26E+00	1.22E+02
Lead	White-tailed Deer	1.81E+02	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.05E+02	0.00E+00	0.00E+00	5.86E+02
Lead	American Robin	4.52E+01	0.00E+00	5.30E-05	0.00E+00	0.00E+00	1.15E+01	0.00E+00	4.33E+00	0.00E+00	0.00E+00	6.10E+01
Lead	Red-tailed Hawk	1.58E+01	0.00E+00	3.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.44E+01	3.02E+01
Lead	Mallard	0.00E+00	1.95E+00	3.94E-04	4.91E+01	2.53E-01	0.00E+00	4.39E-01	0.00E+00	0.00E+00	0.00E+00	5.17E+01
Zinc	Short-tailed Shrew	4.84E+01	0.00E+00	3.56E-03	0.00E+00	0.00E+00	2.09E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E+02
Zinc	White-footed Mouse	2.82E+00	0.00E+00	7.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-10	0.00E+00	0.00E+00	2.82E+00
Zinc	Meadow Vole	4.97E+00	0.00E+00	6.48E-03	0.00E+00	0.00E+00	5.80E+01	0.00E+00	1.24E-10	0.00E+00	0.00E+00	6.29E+01
Zinc	Cottontail Rabbit	6.17E+02	0.00E+00	1.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-08	0.00E+00	0.00E+00	6.17E+02
Zinc	Red Fox	5.22E+02	0.00E+00	4.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E+02	8.00E+02
Zinc	Raccoon	4.60E+02	7.93E+01	4.14E-01	1.93E+02	0.00E+00	1.10E+03	0.00E+00	2.35E-09	0.00E+00	2.92E+01	1.86E+03
Zinc	White-tailed Deer	1.45E+03	0.00E+00	4.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.64E-08	0.00E+00	0.00E+00	1.45E+03
Zinc	American Robin	3.62E+02	0.00E+00	1.14E-02	0.00E+00	0.00E+00	1.72E+03	0.00E+00	9.24E-10	0.00E+00	0.00E+00	2.08E+03
Zinc	Red-tailed Hawk	1.26E+02	0.00E+00	6.91E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.73E+01	1.93E+02
Zinc	Mallard	0.00E+00	1.43E+01	8.52E-02	3.26E+02	4.94E+01	0.00E+00	8.57E-11	0.00E+00	0.00E+00	0.00E+00	3.90E+02
Off-Site Area												
Arsenic	Short-tailed Shrew	7.61E-01	0.00E+00	1.65E-05	0.00E+00	0.00E+00	6.44E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E+00
Arsenic	White-footed Mouse	4.42E-02	0.00E+00	3.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.78E-04	0.00E+00	0.00E+00	4.48E-02
Arsenic	Meadow Vole	7.80E-02	0.00E+00	3.00E-05	0.00E+00	0.00E+00	1.79E-01	0.00E+00	4.25E-04	0.00E+00	0.00E+00	2.57E-01
Arsenic	Cottontail Rabbit	9.69E+00	0.00E+00	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.03E-02	0.00E+00	0.00E+00	9.73E+00
Arsenic	Red Fox	8.19E+00	0.00E+00	1.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.38E+00	1.26E+01

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
Arsenic	Raccoon	7.22E+00	3.79E+00	1.92E-03	1.45E+01	0.00E+00	3.39E+00	0.00E+00	8.06E-03	2.70E-02	4.61E-01	2.94E+01
Arsenic	White-tailed Deer	2.28E+01	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-01	0.00E+00	0.00E+00	2.31E+01
Arsenic	American Robin	5.68E+00	0.00E+00	5.30E-05	0.00E+00	0.00E+00	5.32E+00	0.00E+00	3.16E-03	0.00E+00	0.00E+00	1.10E+01
Arsenic	Belted Kingfisher	0.00E+00	0.00E+00	8.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.28E-02	0.00E+00	4.28E-02
Arsenic	Red-tailed Hawk	1.98E+00	0.00E+00	3.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E+00	3.04E+00
Arsenic	Great Blue Heron	0.00E+00	1.36E+01	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-01	0.00E+00	1.39E+01
Arsenic	Mallard	0.00E+00	6.82E-01	3.94E-04	2.46E+01	3.65E-03	0.00E+00	1.23E-01	0.00E+00	0.00E+00	0.00E+00	2.54E+01
Cadmium	Short-tailed Shrew	2.26E-01	0.00E+00	6.53E-04	0.00E+00	0.00E+00	1.67E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E+00
Cadmium	White-footed Mouse	1.31E-02	0.00E+00	1.31E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-03	0.00E+00	0.00E+00	1.63E-02
Cadmium	Meadow Vole	2.32E-02	0.00E+00	1.19E-03	0.00E+00	0.00E+00	4.63E-01	0.00E+00	1.40E-03	0.00E+00	0.00E+00	4.89E-01
Cadmium	Cottontail Rabbit	2.88E+00	0.00E+00	2.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-01	0.00E+00	0.00E+00	3.03E+00
Cadmium	Red Fox	2.43E+00	0.00E+00	7.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E+00	3.87E+00
Cadmium	Raccoon	2.14E+00	1.10E+01	7.58E-02	1.59E+02	0.00E+00	8.78E+00	0.00E+00	2.65E-02	8.51E+00	1.44E-01	1.90E+02
Cadmium	White-tailed Deer	6.76E+00	0.00E+00	7.33E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.74E-01	0.00E+00	0.00E+00	8.46E+00
Cadmium	American Robin	1.69E+00	0.00E+00	2.10E-03	0.00E+00	0.00E+00	1.38E+01	0.00E+00	1.04E-02	0.00E+00	0.00E+00	1.55E+01
Cadmium	Belted Kingfisher	0.00E+00	0.00E+00	3.17E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E+01	0.00E+00	1.35E+01
Cadmium	Red-tailed Hawk	5.89E-01	0.00E+00	1.27E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E-01	9.32E-01
Cadmium	Great Blue Heron	0.00E+00	3.95E+01	2.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.54E+01	0.00E+00	1.15E+02
Cadmium	Mallard	0.00E+00	1.97E+00	1.56E-02	2.68E+02	6.85E+00	0.00E+00	3.59E+00	0.00E+00	0.00E+00	0.00E+00	2.80E+02
Lead	Short-tailed Shrew	1.86E+01	0.00E+00	8.58E-05	0.00E+00	0.00E+00	4.29E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E+01
Lead	White-footed Mouse	1.08E+00	0.00E+00	1.72E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-02	0.00E+00	0.00E+00	1.10E+00
Lead	Meadow Vole	1.91E+00	0.00E+00	1.56E-04	0.00E+00	0.00E+00	1.19E+00	0.00E+00	1.08E-02	0.00E+00	0.00E+00	3.11E+00
Lead	Cottontail Rabbit	2.37E+02	0.00E+00	3.02E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00	0.00E+00	2.38E+02
Lead	Red Fox	2.00E+02	0.00E+00	9.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+02	3.07E+02
Lead	Raccoon	1.76E+02	6.11E+01	9.96E-03	1.64E+02	0.00E+00	2.26E+01	0.00E+00	2.04E-01	1.11E-04	1.13E+01	4.36E+02
Lead	White-tailed Deer	5.57E+02	0.00E+00	9.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.48E+00	0.00E+00	0.00E+00	5.64E+02
Lead	American Robin	1.39E+02	0.00E+00	2.76E-04	0.00E+00	0.00E+00	3.55E+01	0.00E+00	8.00E-02	0.00E+00	0.00E+00	1.75E+02
Lead	Belted Kingfisher	0.00E+00	0.00E+00	4.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-04	0.00E+00	5.92E-04
Lead	Red-tailed Hawk	4.85E+01	0.00E+00	1.66E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.59E+01	7.44E+01
Lead	Great Blue Heron	0.00E+00	2.20E+02	3.01E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.83E-04	0.00E+00	2.20E+02
Lead	Mallard	0.00E+00	1.10E+01	2.05E-03	2.77E+02	1.32E+00	0.00E+00	2.48E+00	0.00E+00	0.00E+00	0.00E+00	2.92E+02
Zinc	Short-tailed Shrew	4.97E+01	0.00E+00	2.77E-02	0.00E+00	0.00E+00	2.14E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.64E+02

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
Zinc	White-footed Mouse	2.89E+00	0.00E+00	5.54E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.25E-01	0.00E+00	0.00E+00	3.37E+00
Zinc	Meadow Vole	5.10E+00	0.00E+00	5.03E-02	0.00E+00	0.00E+00	5.95E+01	0.00E+00	3.13E-01	0.00E+00	0.00E+00	6.50E+01
Zinc	Cottontail Rabbit	6.33E+02	0.00E+00	9.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E+01	0.00E+00	0.00E+00	6.64E+02
Zinc	Red Fox	5.36E+02	0.00E+00	3.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E+02	8.37E+02
Zinc	Raccoon	4.72E+02	2.96E+02	3.21E+00	7.21E+02	0.00E+00	1.13E+03	0.00E+00	5.93E+00	8.19E+02	3.15E+01	3.48E+03
Zinc	White-tailed Deer	1.49E+03	0.00E+00	3.10E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E+02	0.00E+00	0.00E+00	1.74E+03
Zinc	American Robin	3.71E+02	0.00E+00	8.89E-02	0.00E+00	0.00E+00	1.77E+03	0.00E+00	2.33E+00	0.00E+00	0.00E+00	2.14E+03
Zinc	Belted Kingfisher	0.00E+00	0.00E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E+03	0.00E+00	1.30E+03
Zinc	Red-tailed Hawk	1.30E+02	0.00E+00	5.37E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.24E+01	2.03E+02
Zinc	Great Blue Heron	0.00E+00	1.07E+03	9.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.26E+03	0.00E+00	8.32E+03
Zinc	Mallard	0.00E+00	5.34E+01	6.62E-01	1.22E+03	3.84E+02	0.00E+00	3.20E-10	0.00E+00	0.00E+00	0.00E+00	1.66E+03
Background Area												
Arsenic	Short-tailed Shrew	1.87E-02	0.00E+00	1.65E-05	0.00E+00	0.00E+00	1.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.46E-02
Arsenic	White-footed Mouse	1.09E-03	0.00E+00	3.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.10E-04	0.00E+00	0.00E+00	1.63E-03
Arsenic	Meadow Vole	1.92E-03	0.00E+00	3.00E-05	0.00E+00	0.00E+00	4.40E-03	0.00E+00	3.75E-04	0.00E+00	0.00E+00	6.73E-03
Arsenic	Cottontail Rabbit	2.38E-01	0.00E+00	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E-02	0.00E+00	0.00E+00	2.75E-01
Arsenic	Red Fox	2.02E-01	0.00E+00	1.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-01	3.27E-01
Arsenic	Raccoon	1.78E-01	5.55E-02	1.92E-03	2.13E-01	0.00E+00	8.34E-02	0.00E+00	7.11E-03	2.70E-02	1.30E-02	5.79E-01
Arsenic	White-tailed Deer	5.60E-01	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E-01	0.00E+00	0.00E+00	8.40E-01
Arsenic	American Robin	1.40E-01	0.00E+00	5.30E-05	0.00E+00	0.00E+00	1.31E-01	0.00E+00	2.79E-03	0.00E+00	0.00E+00	2.74E-01
Arsenic	Belted Kingfisher	0.00E+00	0.00E+00	8.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.28E-02	0.00E+00	4.28E-02
Arsenic	Red-tailed Hawk	4.88E-02	0.00E+00	3.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E-02	7.90E-02
Arsenic	Great Blue Heron	0.00E+00	2.00E-01	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-01	0.00E+00	4.40E-01
Arsenic	Mallard	0.00E+00	1.00E-02	3.94E-04	3.60E-01	3.65E-03	0.00E+00	1.80E-03	0.00E+00	0.00E+00	0.00E+00	3.76E-01
Cadmium	Short-tailed Shrew	5.85E-03	0.00E+00	8.25E-06	0.00E+00	0.00E+00	4.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.91E-02
Cadmium	White-footed Mouse	3.40E-04	0.00E+00	1.65E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-04	0.00E+00	0.00E+00	4.76E-04
Cadmium	Meadow Vole	6.00E-04	0.00E+00	1.50E-05	0.00E+00	0.00E+00	1.20E-02	0.00E+00	8.75E-05	0.00E+00	0.00E+00	1.27E-02
Cadmium	Cottontail Rabbit	7.45E-02	0.00E+00	2.90E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.30E-03	0.00E+00	0.00E+00	8.31E-02
Cadmium	Red Fox	6.30E-02	0.00E+00	9.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-02	1.01E-01
Cadmium	Raccoon	5.55E-02	5.55E-02	9.58E-04	8.06E-01	0.00E+00	2.28E-01	0.00E+00	1.66E-03	1.07E-01	3.94E-03	1.26E+00
Cadmium	White-tailed Deer	1.75E-01	0.00E+00	9.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.09E-02	0.00E+00	0.00E+00	2.45E-01
Cadmium	American Robin	4.37E-02	0.00E+00	2.65E-05	0.00E+00	0.00E+00	3.57E-01	0.00E+00	6.51E-04	0.00E+00	0.00E+00	4.01E-01
Cadmium	Belted Kingfisher	0.00E+00	0.00E+00	4.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-01	0.00E+00	1.70E-01

Table 7-23
Total Exposure for Representative Wildlife Species Based on Consumption of Surface Water, Soils, Sediments, and Food
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Representative Wildlife Species	Maximum Dose Received from Consuming Soil (mg/kg/day)	Maximum Dose Received from Consuming Sediments (mg/kg/day)	Maximum Dose Received from Consuming Surface Water (mg/kg/day)	Maximum Dose Received from Consuming Benthic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Soil Invertebrates (mg/kg/day)	Maximum Dose Received from Consuming Aquatic Plants (mg/kg/day)	Maximum Dose Received from Consuming Terrestrial Plants (mg/kg/day)	Maximum Dose Received from Consuming Whole Fish (mg/kg/day)	Maximum Dose Received from Consuming Small Mammals (mg/kg/day)	Total Dose Received (mg/kg/day)
Cadmium	Red-tailed Hawk	1.53E-02	0.00E+00	1.60E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.06E-03	2.45E-02
Cadmium	Great Blue Heron	0.00E+00	2.00E-01	2.90E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.52E-01	0.00E+00	1.15E+00
Cadmium	Mallard	0.00E+00	1.00E-02	1.97E-04	1.36E+00	8.65E-02	0.00E+00	1.82E-02	0.00E+00	0.00E+00	0.00E+00	1.47E+00
Lead	Short-tailed Shrew	3.35E-02	0.00E+00	1.65E-05	0.00E+00	0.00E+00	7.72E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.12E-02
Lead	White-footed Mouse	1.94E-03	0.00E+00	3.30E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-02	0.00E+00	0.00E+00	3.36E-02
Lead	Meadow Vole	3.43E-03	0.00E+00	3.00E-05	0.00E+00	0.00E+00	2.15E-03	0.00E+00	2.33E-02	0.00E+00	0.00E+00	2.89E-02
Lead	Cottontail Rabbit	4.26E-01	0.00E+00	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E+00	0.00E+00	0.00E+00	2.63E+00
Lead	Red Fox	3.60E-01	0.00E+00	1.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E+00	1.55E+00
Lead	Raccoon	3.17E-01	1.11E-01	1.92E-03	2.99E-01	0.00E+00	4.07E-02	0.00E+00	4.41E-01	2.13E-05	1.25E-01	1.34E+00
Lead	White-tailed Deer	1.00E+00	0.00E+00	1.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E+01	0.00E+00	0.00E+00	1.72E+01
Lead	American Robin	2.50E-01	0.00E+00	5.30E-05	0.00E+00	0.00E+00	6.38E-02	0.00E+00	1.73E-01	0.00E+00	0.00E+00	4.87E-01
Lead	Belted Kingfisher	0.00E+00	0.00E+00	8.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.38E-05	0.00E+00	1.14E-04
Lead	Red-tailed Hawk	8.73E-02	0.00E+00	3.20E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.87E-01	3.74E-01
Lead	Great Blue Heron	0.00E+00	4.00E-01	5.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-04	0.00E+00	4.01E-01
Lead	Mallard	0.00E+00	2.00E-02	3.94E-04	5.04E-01	2.53E-01	0.00E+00	4.50E-03	0.00E+00	0.00E+00	0.00E+00	7.82E-01
Zinc	Short-tailed Shrew	2.29E-01	0.00E+00	8.25E-06	0.00E+00	0.00E+00	9.88E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E+00
Zinc	White-footed Mouse	1.33E-02	0.00E+00	1.65E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.81E-02	0.00E+00	0.00E+00	7.15E-02
Zinc	Meadow Vole	2.35E-02	0.00E+00	1.50E-05	0.00E+00	0.00E+00	2.74E-01	0.00E+00	4.28E-02	0.00E+00	0.00E+00	3.41E-01
Zinc	Cottontail Rabbit	2.92E+00	0.00E+00	2.90E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.05E+00	0.00E+00	0.00E+00	6.97E+00
Zinc	Red Fox	2.47E+00	0.00E+00	9.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E+00	5.61E+00
Zinc	Raccoon	2.18E+00	2.00E+00	9.58E-04	4.86E+00	0.00E+00	5.20E+00	0.00E+00	8.11E-01	2.44E-01	3.31E-01	1.56E+01
Zinc	White-tailed Deer	6.86E+00	0.00E+00	9.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.98E+01	0.00E+00	0.00E+00	3.66E+01
Zinc	American Robin	1.71E+00	0.00E+00	2.65E-05	0.00E+00	0.00E+00	8.17E+00	0.00E+00	3.18E-01	0.00E+00	0.00E+00	1.02E+01
Zinc	Belted Kingfisher	0.00E+00	0.00E+00	4.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.86E-01	0.00E+00	3.86E-01
Zinc	Red-tailed Hawk	5.98E-01	0.00E+00	1.60E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.60E-01	1.36E+00
Zinc	Great Blue Heron	0.00E+00	7.20E+00	2.90E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E+00	0.00E+00	9.36E+00
Zinc	Mallard	0.00E+00	3.60E-01	1.97E-04	8.21E+00	1.14E-01	0.00E+00	2.16E-12	0.00E+00	0.00E+00	0.00E+00	8.68E+00
Notes:												
mg/kg - milligrams per kilogram												
kg/day - kilograms per day												
mg/kg/day - milligrams per kilogram per day												
A value of 0.00E+00 indicates that the chemical was not ingested by the receptor species because it was not encountered due to a species life history.												

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
On-Site Waste Area									
Arsenic	2.53E+00	1	2.53E+00	Short-tailed Shrew	1.50E-02	0.15	0.00225	1.12E+03	Yes
Arsenic	1.09E-01	1	1.09E-01	White-footed Mouse	2.20E-02	0.136	0.002992	3.63E+01	Yes
Arsenic	4.84E-01	1	4.84E-01	Meadow Vole	4.40E-02	0.114	0.005016	9.64E+01	Yes
Arsenic	1.94E+01	1	1.94E+01	Cottontail Rabbit	1.20E+00	0.05	0.06	3.24E+02	Yes
Arsenic	2.35E+01	0.167	3.92E+00	Red Fox	4.50E+00	0.036	0.162	2.42E+01	Yes
Arsenic	5.21E+01	0.052	2.71E+00	Raccoon	4.50E+00	0.036	0.162	1.67E+01	Yes
Arsenic	5.58E+01	0.078	4.35E+00	White-tailed Deer	5.65E+01	0.019	1.0735	4.05E+00	Yes
Arsenic	2.00E+01	1	2.00E+01	American Robin	7.70E-02	5.1	0.3927	5.08E+01	Yes
Arsenic	3.29E-02	1	3.29E-02	Belted Kingfisher	1.48E-01	5.14E+00	0.76072	4.32E-02	HQ<1
Arsenic	5.69E+00	1	5.69E+00	Red-tailed Hawk	1.13E+00	5.1	5.763	9.88E-01	HQ<1
Arsenic	2.37E+01	1	2.37E+01	Great Blue Heron	2.39E+00	5.14E+00	12.2846	1.93E+00	Yes
Arsenic	4.37E+01	1	4.37E+01	Mallard	1.00E+00	5.14E+00	5.14	8.50E+00	Yes
Cadmium	1.59E+01	1	1.59E+01	Short-tailed Shrew	1.50E-02	2.12	0.0318	5.00E+02	Yes
Cadmium	1.21E-01	1	1.21E-01	White-footed Mouse	2.20E-02	1.926	0.042372	2.86E+00	Yes
Cadmium	4.09E+00	1	4.09E+00	Meadow Vole	4.40E-02	1.62	0.07128	5.74E+01	Yes
Cadmium	2.48E+01	1	2.48E+01	Cottontail Rabbit	1.20E+00	0.709	0.8508	2.92E+01	Yes
Cadmium	3.17E+01	0.167	5.29E+00	Red Fox	4.50E+00	0.509	2.2905	2.31E+00	Yes
Cadmium	3.34E+02	0.052	1.74E+01	Raccoon	4.50E+00	0.509	2.2905	7.59E+00	Yes
Cadmium	6.24E+01	0.078	4.87E+00	White-tailed Deer	5.65E+01	0.271	15.3115	3.18E-01	HQ<1
Cadmium	1.30E+02	1	1.30E+02	American Robin	7.70E-02	1.45E+00	0.11165	1.17E+03	Yes
Cadmium	1.93E-02	1	1.93E-02	Belted Kingfisher	1.48E-01	1.45E+00	0.2146	8.97E-02	HQ<1
Cadmium	7.66E+00	1	7.66E+00	Red-tailed Hawk	1.13E+00	1.45E+00	1.6385	4.68E+00	Yes
Cadmium	5.61E+01	1	5.61E+01	Great Blue Heron	2.39E+00	1.45E+00	3.4655	1.62E+01	Yes
Cadmium	3.95E+02	1	3.95E+02	Mallard	1.00E+00	1.45E+00	1.45	2.73E+02	Yes
Lead	1.03E+02	1	1.03E+02	Short-tailed Shrew	1.50E-02	17.58	0.2637	3.92E+02	Yes
Lead	6.54E+00	1	6.54E+00	White-footed Mouse	2.20E-02	15.98	0.35156	1.86E+01	Yes

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Lead	1.52E+01	1	1.52E+01	Meadow Vole	4.40E-02	13.44	0.59136	2.57E+01	Yes
Lead	1.18E+03	1	1.18E+03	Cottontail Rabbit	1.20E+00	5.8	6.96	1.70E+02	Yes
Lead	1.44E+03	0.167	2.40E+02	Red Fox	4.50E+00	4.22	18.99	1.26E+01	Yes
Lead	1.31E+03	0.052	6.82E+01	Raccoon	4.50E+00	4.22	18.99	3.59E+00	Yes
Lead	3.36E+03	0.078	2.62E+02	White-tailed Deer	5.65E+01	2.24	126.56	2.07E+00	Yes
Lead	7.96E+02	1	7.96E+02	American Robin	7.70E-02	1.13	0.08701	9.15E+03	Yes
Lead	1.10E-02	1	1.10E-02	Belted Kingfisher	1.48E-01	1.13E+00	0.16724	6.57E-02	HQ<1
Lead	3.48E+02	1	3.48E+02	Red-tailed Hawk	1.13E+00	1.13	1.2769	2.73E+02	Yes
Lead	3.26E+02	1	3.26E+02	Great Blue Heron	2.39E+00	1.13E+00	2.7007	1.21E+02	Yes
Lead	4.35E+02	1	4.35E+02	Mallard	1.00E+00	1.13E+00	1.13	3.85E+02	Yes
Zinc	1.02E+03	1	1.02E+03	Short-tailed Shrew	1.50E-02	351.7	5.2755	1.94E+02	Yes
Zinc	1.33E+01	1	1.33E+01	White-footed Mouse	2.20E-02	319.5	7.029	1.89E+00	Yes
Zinc	2.52E+02	1	2.52E+02	Meadow Vole	4.40E-02	268.7	11.8228	2.13E+01	Yes
Zinc	2.60E+03	1	2.60E+03	Cottontail Rabbit	1.20E+00	117.6	141.12	1.84E+01	Yes
Zinc	3.25E+03	0.167	5.43E+02	Red Fox	4.50E+00	84.5	380.25	1.43E+00	Yes
Zinc	8.07E+03	0.052	4.20E+02	Raccoon	4.50E+00	84.5	380.25	1.10E+00	Yes
Zinc	6.85E+03	0.078	5.34E+02	White-tailed Deer	5.65E+01	44.9	2536.85	2.11E-01	HQ<1
Zinc	8.32E+03	1	8.32E+03	American Robin	7.70E-02	14.5	1.1165	7.45E+03	Yes
Zinc	1.49E+00	1	1.49E+00	Belted Kingfisher	1.48E-01	1.45E+01	2.146	6.94E-01	HQ<1
Zinc	7.88E+02	1	7.88E+02	Red-tailed Hawk	1.13E+00	14.5	16.385	4.81E+01	Yes
Zinc	1.80E+03	1	1.80E+03	Great Blue Heron	2.39E+00	1.45E+01	34.655	5.18E+01	Yes
Zinc	2.51E+03	1	2.51E+03	Mallard	1.00E+00	1.45E+01	14.5	1.73E+02	Yes
On-Site Non-Waste									
Arsenic	8.99E-01	1	8.99E-01	Short-tailed Shrew	1.50E-02	0.15	0.00225	3.99E+02	Yes
Arsenic	7.92E-02	1	7.92E-02	White-footed Mouse	2.20E-02	0.136	0.002992	2.65E+01	Yes
Arsenic	2.02E-01	1	2.02E-01	Meadow Vole	4.40E-02	0.114	0.005016	4.02E+01	Yes
Arsenic	9.75E+00	1	9.75E+00	Cottontail Rabbit	1.20E+00	0.05	0.06	1.62E+02	Yes

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Arsenic	9.63E+00	0.238	2.29E+00	Red Fox	4.50E+00	0.036	0.162	1.41E+01	Yes
Arsenic	1.10E+01	0.074	8.16E-01	Raccoon	4.50E+00	0.036	0.162	5.04E+00	Yes
Arsenic	4.06E+01	0.112	4.55E+00	White-tailed Deer	5.65E+01	0.019	1.0735	4.24E+00	Yes
Arsenic	7.31E+00	1	7.31E+00	American Robin	7.70E-02	5.1	0.3927	1.86E+01	Yes
Arsenic	2.33E+00	1	2.33E+00	Red-tailed Hawk	1.13E+00	5.1	5.763	4.05E-01	HQ<1
Arsenic	4.24E+00	1	4.24E+00	Mallard	1.00E+00	5.14E+00	5.14	8.25E-01	HQ<1
Cadmium	7.84E+00	1	7.84E+00	Short-tailed Shrew	1.50E-02	2.12	0.0318	2.46E+02	Yes
Cadmium	1.04E+00	1	1.04E+00	White-footed Mouse	2.20E-02	1.926	0.042372	2.46E+01	Yes
Cadmium	2.74E+00	1	2.74E+00	Meadow Vole	4.40E-02	1.62	0.07128	3.84E+01	Yes
Cadmium	8.08E+01	1	8.08E+01	Cottontail Rabbit	1.20E+00	0.709	0.8508	9.50E+01	Yes
Cadmium	4.64E+01	0.238	1.11E+01	Red Fox	4.50E+00	0.509	2.2905	4.83E+00	Yes
Cadmium	8.37E+01	0.074	6.19E+00	Raccoon	4.50E+00	0.509	2.2905	2.70E+00	Yes
Cadmium	5.34E+02	0.112	5.98E+01	White-tailed Deer	5.65E+01	0.271	15.3115	3.91E+00	Yes
Cadmium	6.95E+01	1	6.95E+01	American Robin	7.70E-02	1.45E+00	0.11165	6.22E+02	Yes
Cadmium	1.13E+01	1	1.13E+01	Red-tailed Hawk	1.13E+00	1.45E+00	1.6385	6.87E+00	Yes
Cadmium	3.41E+01	1	3.41E+01	Mallard	1.00E+00	1.45E+00	1.45	2.35E+01	Yes
Lead	7.44E+00	1	7.44E+00	Short-tailed Shrew	1.50E-02	17.58	0.2637	2.82E+01	Yes
Lead	1.14E+00	1	1.14E+00	White-footed Mouse	2.20E-02	15.98	0.35156	3.25E+00	Yes
Lead	1.59E+00	1	1.59E+00	Meadow Vole	4.40E-02	13.44	0.59136	2.69E+00	Yes
Lead	1.32E+02	1	1.32E+02	Cottontail Rabbit	1.20E+00	5.8	6.96	1.90E+01	Yes
Lead	1.25E+02	0.238	2.97E+01	Red Fox	4.50E+00	4.22	18.99	1.56E+00	Yes
Lead	1.22E+02	0.074	9.03E+00	Raccoon	4.50E+00	4.22	18.99	4.75E-01	HQ<1
Lead	5.86E+02	0.112	6.56E+01	White-tailed Deer	5.65E+01	2.24	126.56	5.18E-01	HQ<1
Lead	6.10E+01	1	6.10E+01	American Robin	7.70E-02	1.13	0.08701	7.01E+02	Yes
Lead	3.02E+01	1	3.02E+01	Red-tailed Hawk	1.13E+00	1.13	1.2769	2.37E+01	Yes
Lead	5.17E+01	1	5.17E+01	Mallard	1.00E+00	1.13E+00	1.13	4.58E+01	Yes
Zinc	2.57E+02	1	2.57E+02	Short-tailed Shrew	1.50E-02	351.7	5.2755	4.87E+01	Yes

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Zinc	2.82E+00	1	2.82E+00	White-footed Mouse	2.20E-02	319.5	7.029	4.02E-01	HQ<1
Zinc	6.29E+01	1	6.29E+01	Meadow Vole	4.40E-02	268.7	11.8228	5.32E+00	Yes
Zinc	6.17E+02	1	6.17E+02	Cottontail Rabbit	1.20E+00	117.6	141.12	4.37E+00	Yes
Zinc	8.00E+02	0.238	1.90E+02	Red Fox	4.50E+00	84.5	380.25	5.01E-01	HQ<1
Zinc	1.86E+03	0.074	1.38E+02	Raccoon	4.50E+00	84.5	380.25	3.62E-01	HQ<1
Zinc	1.45E+03	0.112	1.63E+02	White-tailed Deer	5.65E+01	44.9	2536.85	6.41E-02	HQ<1
Zinc	2.08E+03	1	2.08E+03	American Robin	7.70E-02	14.5	1.1165	1.86E+03	Yes
Zinc	1.93E+02	1	1.93E+02	Red-tailed Hawk	1.13E+00	14.5	16.385	1.18E+01	Yes
Zinc	3.90E+02	1	3.90E+02	Mallard	1.00E+00	1.45E+01	14.5	2.69E+01	Yes
Off-Site									
Arsenic	1.40E+00	1	1.40E+00	Short-tailed Shrew	1.50E-02	0.15	0.00225	6.24E+02	Yes
Arsenic	4.48E-02	1	4.48E-02	White-footed Mouse	2.20E-02	0.136	0.002992	1.50E+01	Yes
Arsenic	2.57E-01	1	2.57E-01	Meadow Vole	4.40E-02	0.114	0.005016	5.13E+01	Yes
Arsenic	9.73E+00	1	9.73E+00	Cottontail Rabbit	1.20E+00	0.05	0.06	1.62E+02	Yes
Arsenic	1.26E+01	0.595	7.48E+00	Red Fox	4.50E+00	0.036	0.162	4.62E+01	Yes
Arsenic	2.94E+01	0.874	2.57E+01	Raccoon	4.50E+00	0.036	0.162	1.59E+02	Yes
Arsenic	2.31E+01	0.81	1.87E+01	White-tailed Deer	5.65E+01	0.019	1.0735	1.74E+01	Yes
Arsenic	1.10E+01	1	1.10E+01	American Robin	7.70E-02	5.1	0.3927	2.80E+01	Yes
Arsenic	4.28E-02	1	4.28E-02	Belted Kingfisher	1.48E-01	5.14E+00	0.76072	5.63E-02	HQ<1
Arsenic	3.04E+00	0.935	2.84E+00	Red-tailed Hawk	1.13E+00	5.1	5.763	4.93E-01	HQ<1
Arsenic	1.39E+01	1	1.39E+01	Great Blue Heron	2.39E+00	5.14E+00	12.2846	1.13E+00	Yes
Arsenic	2.54E+01	1	2.54E+01	Mallard	1.00E+00	5.14E+00	5.14	4.94E+00	Yes
Cadmium	1.89E+00	1	1.89E+00	Short-tailed Shrew	1.50E-02	2.12	0.0318	5.96E+01	Yes
Cadmium	1.63E-02	1	1.63E-02	White-footed Mouse	2.20E-02	1.926	0.042372	3.86E-01	HQ<1
Cadmium	4.89E-01	1	4.89E-01	Meadow Vole	4.40E-02	1.62	0.07128	6.86E+00	Yes
Cadmium	3.03E+00	1	3.03E+00	Cottontail Rabbit	1.20E+00	0.709	0.8508	3.56E+00	Yes
Cadmium	3.87E+00	0.595	2.30E+00	Red Fox	4.50E+00	0.509	2.2905	1.01E+00	Yes

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Cadmium	1.90E+02	0.874	1.66E+02	Raccoon	4.50E+00	0.509	2.2905	7.24E+01	Yes
Cadmium	8.46E+00	0.81	6.85E+00	White-tailed Deer	5.65E+01	0.271	15.3115	4.48E-01	HQ<1
Cadmium	1.55E+01	1	1.55E+01	American Robin	7.70E-02	1.45E+00	0.11165	1.39E+02	Yes
Cadmium	1.35E+01	1	1.35E+01	Belted Kingfisher	1.48E-01	1.45E+00	0.2146	6.28E+01	Yes
Cadmium	9.32E-01	0.935	8.72E-01	Red-tailed Hawk	1.13E+00	1.45E+00	1.6385	5.32E-01	HQ<1
Cadmium	1.15E+02	1	1.15E+02	Great Blue Heron	2.39E+00	1.45E+00	3.4655	3.32E+01	Yes
Cadmium	2.80E+02	1	2.80E+02	Mallard	1.00E+00	1.45E+00	1.45	1.93E+02	Yes
Lead	2.29E+01	1	2.29E+01	Short-tailed Shrew	1.50E-02	17.58	0.2637	8.68E+01	Yes
Lead	1.10E+00	1	1.10E+00	White-footed Mouse	2.20E-02	15.98	0.35156	3.12E+00	Yes
Lead	3.11E+00	1	3.11E+00	Meadow Vole	4.40E-02	13.44	0.59136	5.26E+00	Yes
Lead	2.38E+02	1	2.38E+02	Cottontail Rabbit	1.20E+00	5.8	6.96	3.42E+01	Yes
Lead	3.07E+02	0.595	1.83E+02	Red Fox	4.50E+00	4.22	18.99	9.63E+00	Yes
Lead	4.36E+02	0.874	3.81E+02	Raccoon	4.50E+00	4.22	18.99	2.01E+01	Yes
Lead	5.64E+02	0.81	4.57E+02	White-tailed Deer	5.65E+01	2.24	126.56	3.61E+00	Yes
Lead	1.75E+02	1	1.75E+02	American Robin	7.70E-02	1.13	0.08701	2.01E+03	Yes
Lead	5.92E-04	1	5.92E-04	Belted Kingfisher	1.48E-01	1.13E+00	0.16724	3.54E-03	HQ<1
Lead	7.44E+01	0.935	6.96E+01	Red-tailed Hawk	1.13E+00	1.13	1.2769	5.45E+01	Yes
Lead	2.20E+02	1	2.20E+02	Great Blue Heron	2.39E+00	1.13E+00	2.7007	8.15E+01	Yes
Lead	2.92E+02	1	2.92E+02	Mallard	1.00E+00	1.13E+00	1.13	2.58E+02	Yes
Zinc	2.64E+02	1	2.64E+02	Short-tailed Shrew	1.50E-02	351.7	5.2755	5.00E+01	Yes
Zinc	3.37E+00	1	3.37E+00	White-footed Mouse	2.20E-02	319.5	7.029	4.79E-01	HQ<1
Zinc	6.50E+01	1	6.50E+01	Meadow Vole	4.40E-02	268.7	11.8228	5.49E+00	Yes
Zinc	6.64E+02	1	6.64E+02	Cottontail Rabbit	1.20E+00	117.6	141.12	4.70E+00	Yes
Zinc	8.37E+02	0.595	4.98E+02	Red Fox	4.50E+00	84.5	380.25	1.31E+00	Yes
Zinc	3.48E+03	0.874	3.04E+03	Raccoon	4.50E+00	84.5	380.25	7.99E+00	Yes
Zinc	1.74E+03	0.81	1.41E+03	White-tailed Deer	5.65E+01	44.9	2536.85	5.54E-01	HQ<1
Zinc	2.14E+03	1	2.14E+03	American Robin	7.70E-02	14.5	1.1165	1.92E+03	Yes

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Zinc	1.30E+03	1	1.30E+03	Belted Kingfisher	1.48E-01	1.45E+01	2.146	6.04E+02	Yes
Zinc	2.03E+02	0.935	1.90E+02	Red-tailed Hawk	1.13E+00	14.5	16.385	1.16E+01	Yes
Zinc	8.32E+03	1	8.32E+03	Great Blue Heron	2.39E+00	1.45E+01	34.655	2.40E+02	Yes
Zinc	1.66E+03	1	1.66E+03	Mallard	1.00E+00	1.45E+01	14.5	1.14E+02	Yes
Background									
Arsenic	3.46E-02	1	3.46E-02	Short-tailed Shrew	1.50E-02	0.15	0.00225	1.54E+01	Yes
Arsenic	1.63E-03	1	1.63E-03	White-footed Mouse	2.20E-02	0.136	0.002992	5.45E-01	HQ<1
Arsenic	6.73E-03	1	6.73E-03	Meadow Vole	4.40E-02	0.114	0.005016	1.34E+00	Yes
Arsenic	2.75E-01	1	2.75E-01	Cottontail Rabbit	1.20E+00	0.05	0.06	4.58E+00	Yes
Arsenic	3.27E-01	1	3.27E-01	Red Fox	4.50E+00	0.036	0.162	2.02E+00	Yes
Arsenic	5.79E-01	1	5.79E-01	Raccoon	4.50E+00	0.036	0.162	3.57E+00	Yes
Arsenic	8.40E-01	1	8.40E-01	White-tailed Deer	5.65E+01	0.019	1.0735	7.82E-01	HQ<1
Arsenic	2.74E-01	1	2.74E-01	American Robin	7.70E-02	5.1	0.3927	6.97E-01	HQ<1
Arsenic	4.28E-02	1	4.28E-02	Belted Kingfisher	1.48E-01	5.14E+00	0.76072	5.63E-02	HQ<1
Arsenic	7.90E-02	1	7.90E-02	Red-tailed Hawk	1.13E+00	5.1	5.763	1.37E-02	HQ<1
Arsenic	4.40E-01	1	4.40E-01	Great Blue Heron	2.39E+00	5.14E+00	12.2846	3.58E-02	HQ<1
Arsenic	3.76E-01	1	3.76E-01	Mallard	1.00E+00	5.14E+00	5.14	7.31E-02	HQ<1
Cadmium	4.91E-02	1	4.91E-02	Short-tailed Shrew	1.50E-02	2.12	0.0318	1.54E+00	Yes
Cadmium	4.76E-04	1	4.76E-04	White-footed Mouse	2.20E-02	1.926	0.042372	1.12E-02	HQ<1
Cadmium	1.27E-02	1	1.27E-02	Meadow Vole	4.40E-02	1.62	0.07128	1.78E-01	HQ<1
Cadmium	8.31E-02	1	8.31E-02	Cottontail Rabbit	1.20E+00	0.709	0.8508	9.77E-02	HQ<1
Cadmium	1.01E-01	1	1.01E-01	Red Fox	4.50E+00	0.509	2.2905	4.42E-02	HQ<1
Cadmium	1.26E+00	1	1.26E+00	Raccoon	4.50E+00	0.509	2.2905	5.49E-01	HQ<1
Cadmium	2.45E-01	1	2.45E-01	White-tailed Deer	5.65E+01	0.271	15.3115	1.60E-02	HQ<1
Cadmium	4.01E-01	1	4.01E-01	American Robin	7.70E-02	1.45E+00	0.11165	3.59E+00	Yes
Cadmium	1.70E-01	1	1.70E-01	Belted Kingfisher	1.48E-01	1.45E+00	0.2146	7.93E-01	HQ<1
Cadmium	2.45E-02	1	2.45E-02	Red-tailed Hawk	1.13E+00	1.45E+00	1.6385	1.50E-02	HQ<1

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
Cadmium	1.15E+00	1	1.15E+00	Great Blue Heron	2.39E+00	1.45E+00	3.4655	3.33E-01	HQ<1
Cadmium	1.47E+00	1	1.47E+00	Mallard	1.00E+00	1.45E+00	1.45	1.02E+00	Yes
Lead	4.12E-02	1	4.12E-02	Short-tailed Shrew	1.50E-02	17.58	0.2637	1.56E-01	HQ<1
Lead	3.36E-02	1	3.36E-02	White-footed Mouse	2.20E-02	15.98	0.35156	9.56E-02	HQ<1
Lead	2.89E-02	1	2.89E-02	Meadow Vole	4.40E-02	13.44	0.59136	4.88E-02	HQ<1
Lead	2.63E+00	1	2.63E+00	Cottontail Rabbit	1.20E+00	5.8	6.96	3.78E-01	HQ<1
Lead	1.55E+00	1	1.55E+00	Red Fox	4.50E+00	4.22	18.99	8.14E-02	HQ<1
Lead	1.34E+00	1	1.34E+00	Raccoon	4.50E+00	4.22	18.99	7.03E-02	HQ<1
Lead	1.72E+01	1	1.72E+01	White-tailed Deer	5.65E+01	2.24	126.56	1.36E-01	HQ<1
Lead	4.87E-01	1	4.87E-01	American Robin	7.70E-02	1.13	0.08701	5.59E+00	Yes
Lead	1.14E-04	1	1.14E-04	Belted Kingfisher	1.48E-01	1.13E+00	0.16724	6.80E-04	HQ<1
Lead	3.74E-01	1	3.74E-01	Red-tailed Hawk	1.13E+00	1.13	1.2769	2.93E-01	HQ<1
Lead	4.01E-01	1	4.01E-01	Great Blue Heron	2.39E+00	1.13E+00	2.7007	1.48E-01	HQ<1
Lead	7.82E-01	1	7.82E-01	Mallard	1.00E+00	1.13E+00	1.13	6.92E-01	HQ<1
Zinc	1.22E+00	1	1.22E+00	Short-tailed Shrew	1.50E-02	351.7	5.2755	2.31E-01	HQ<1
Zinc	7.15E-02	1	7.15E-02	White-footed Mouse	2.20E-02	319.5	7.029	1.02E-02	HQ<1
Zinc	3.41E-01	1	3.41E-01	Meadow Vole	4.40E-02	268.7	11.8228	2.88E-02	HQ<1
Zinc	6.97E+00	1	6.97E+00	Cottontail Rabbit	1.20E+00	117.6	141.12	4.94E-02	HQ<1
Zinc	5.61E+00	1	5.61E+00	Red Fox	4.50E+00	84.5	380.25	1.47E-02	HQ<1
Zinc	1.56E+01	1	1.56E+01	Raccoon	4.50E+00	84.5	380.25	4.11E-02	HQ<1
Zinc	3.66E+01	1	3.66E+01	White-tailed Deer	5.65E+01	44.9	2536.85	1.44E-02	HQ<1
Zinc	1.02E+01	1	1.02E+01	American Robin	7.70E-02	14.5	1.1165	9.14E+00	Yes
Zinc	3.86E-01	1	3.86E-01	Belted Kingfisher	1.48E-01	1.45E+01	2.146	1.80E-01	HQ<1
Zinc	1.36E+00	1	1.36E+00	Red-tailed Hawk	1.13E+00	14.5	16.385	8.29E-02	HQ<1
Zinc	9.36E+00	1	9.36E+00	Great Blue Heron	2.39E+00	1.45E+01	34.655	2.70E-01	HQ<1
Zinc	8.68E+00	1	8.68E+00	Mallard	1.00E+00	1.45E+01	14.5	5.99E-01	HQ<1
Notes:									

Table 7-24
Chemical-Specific Risk Estimates for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

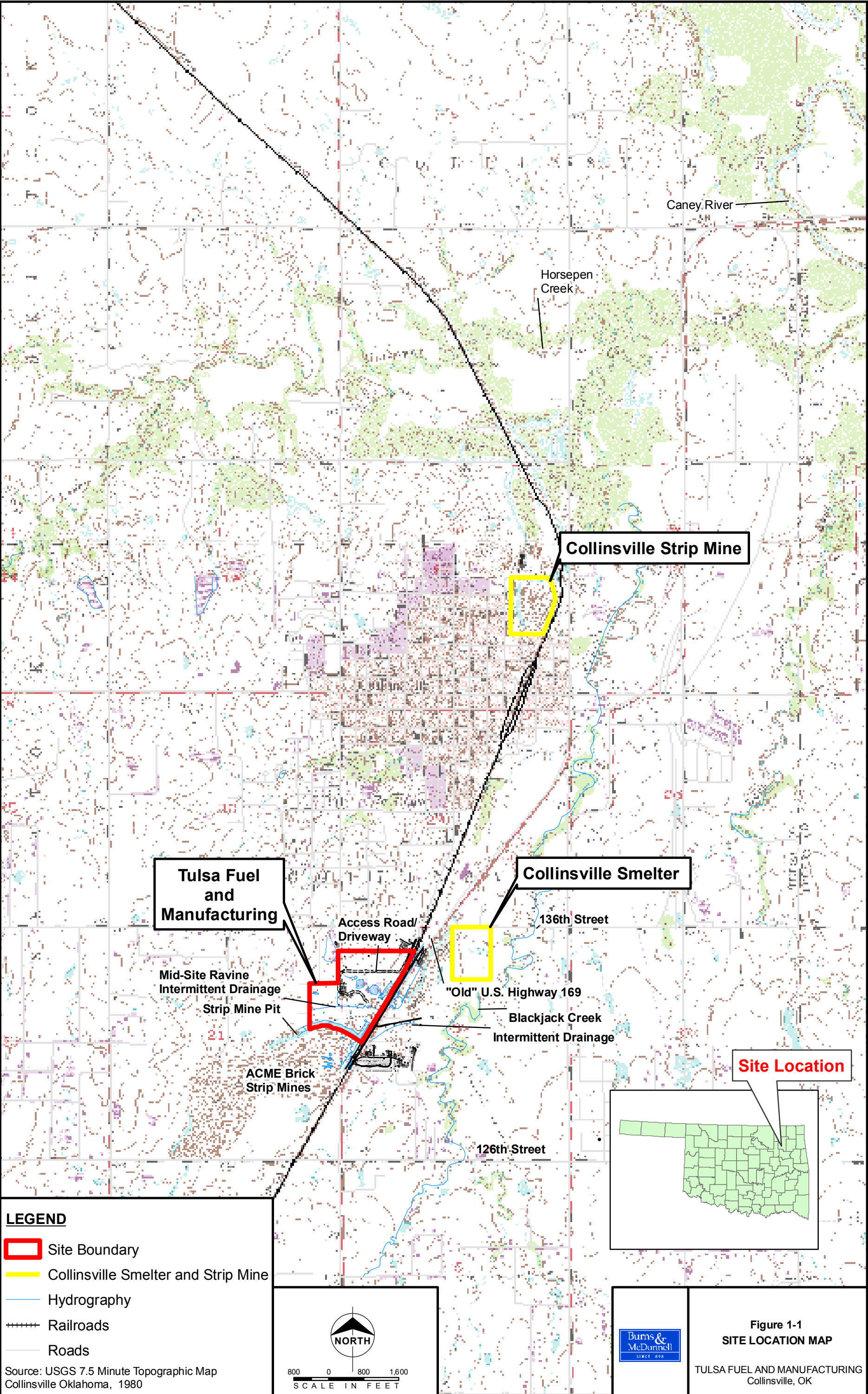
Parameter	Total Dose Received (mg/kg/day)	Fraction of Home Range Within Area Site	Total Dose Received Based on Fraction of Area Within Home Range (mg/kg/day)	Representative Wildlife Species	Average Body Weight (kg)	No Observed Adverse Effects Level (NOAEL) (mg/kg/day)	Weight Normalized NOAEL (mg/day)	Ecological Hazard Quotient	Chemical of Potential Ecological Concern
mg/kg - milligrams per kilogram kg/day - kilograms per day mg/kg/day - milligrams per kilogram per day									

Table 7-25
Total Ecological Hazard Indices for Representative Wildlife Species
Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

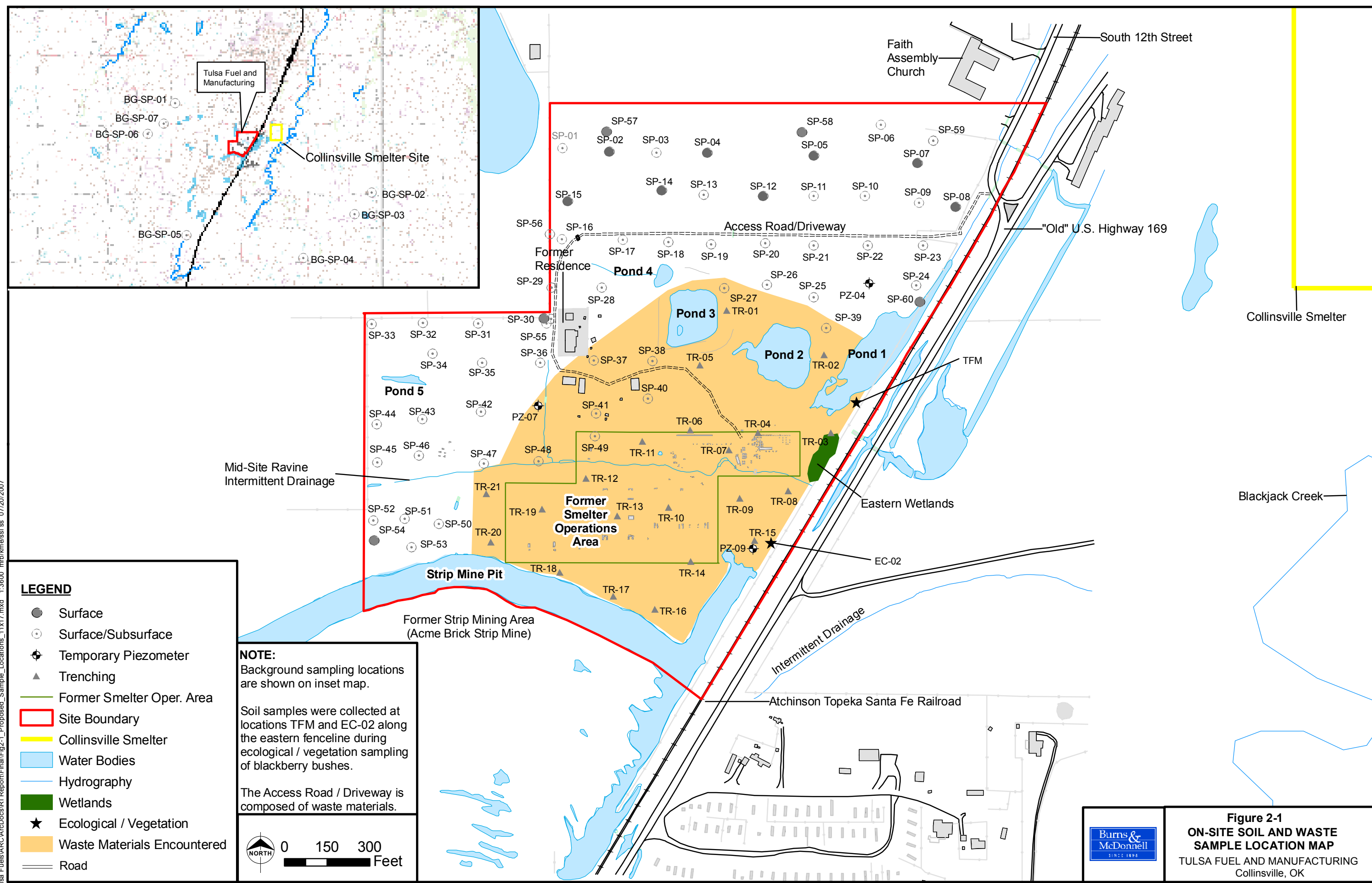
Species	On-Site Waste Area	On-Site Non-Waste Area	Off-Site Area	Background Area
Short-tailed Shrew	2.21E+03	7.23E+02	8.20E+02	1.73E+01
White-footed Mouse	5.96E+01	5.48E+01	1.90E+01	6.62E-01
Meadow Vole	2.01E+02	8.67E+01	6.89E+01	1.60E+00
Cottontail Rabbit	5.42E+02	2.81E+02	2.05E+02	5.10E+00
Red Fox	4.06E+01	2.10E+01	5.81E+01	2.16E+00
Raccoon	2.90E+01	8.58E+00	2.59E+02	4.23E+00
White-tailed Deer	6.65E+00	8.73E+00	2.20E+01	9.48E-01
American Robin	1.78E+04	3.21E+03	4.09E+03	1.90E+01
Belted Kingfisher	8.93E-01	--	6.67E+02	1.03E+00
Red-tailed Hawk	3.26E+02	4.27E+01	6.71E+01	4.05E-01
Great Blue Heron	1.91E+02	--	3.56E+02	7.87E-01
Mallard	8.39E+02	9.70E+01	5.71E+02	2.38E+00
The Short-tailed Shrew was selected as a surrogate for Insectivorous Reptiles and Toads.				
The Meadow Vole was selected as a surrogate for the Prairie Vole and Box Turtle.				
The Mallard Duck and Belted Kingfisher were selected as surrogates for Painted Turtles.				

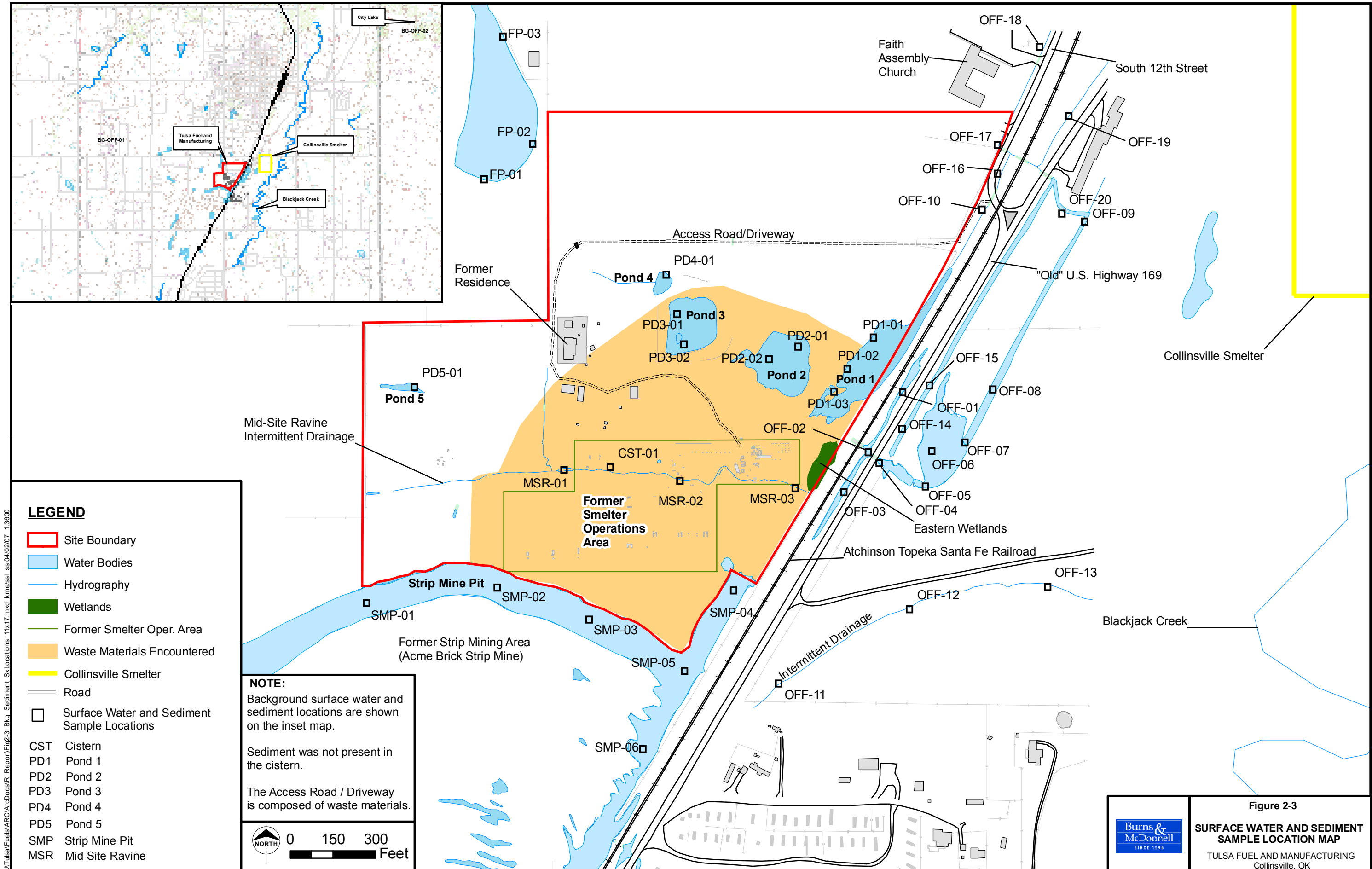
FIGURES

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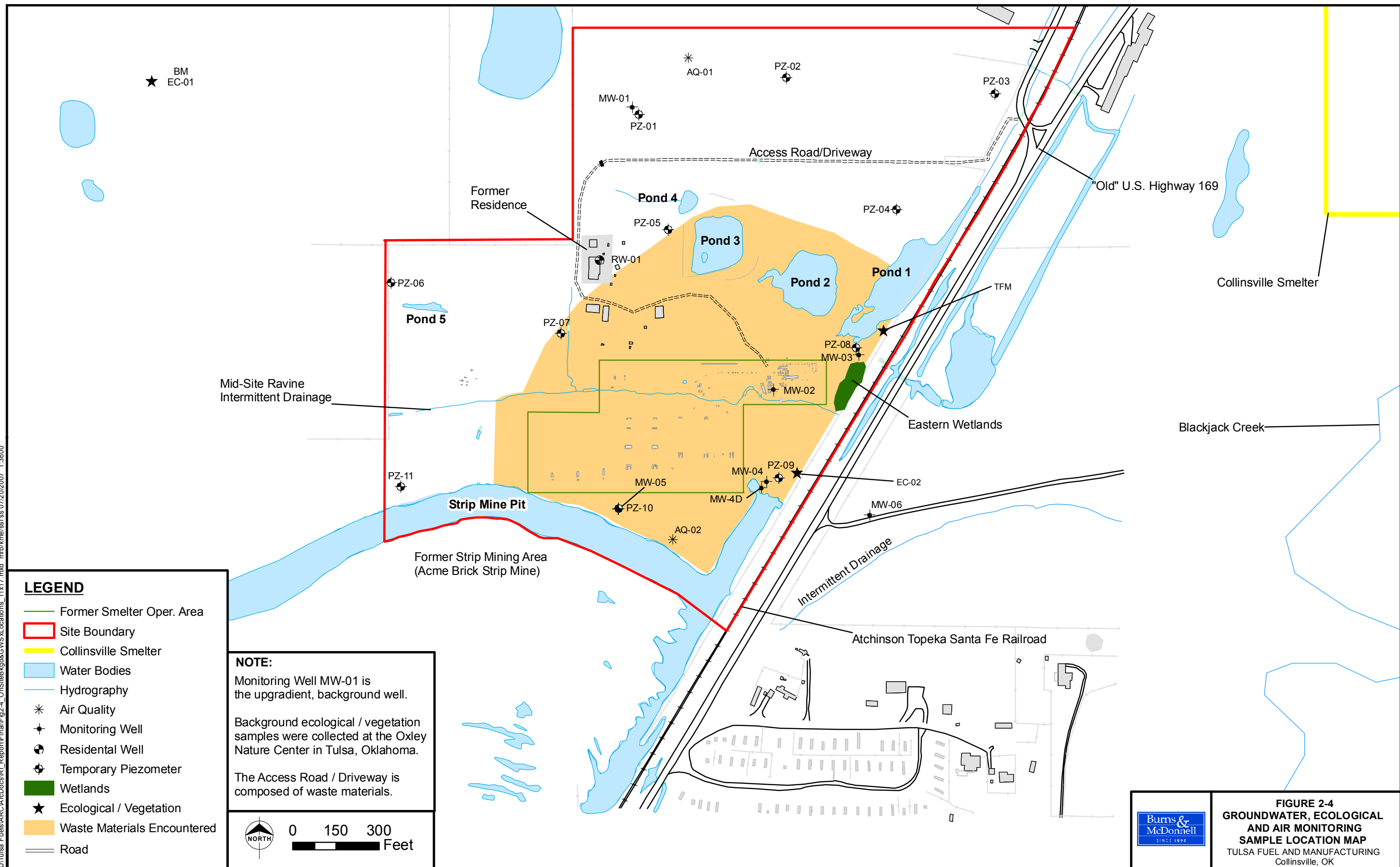


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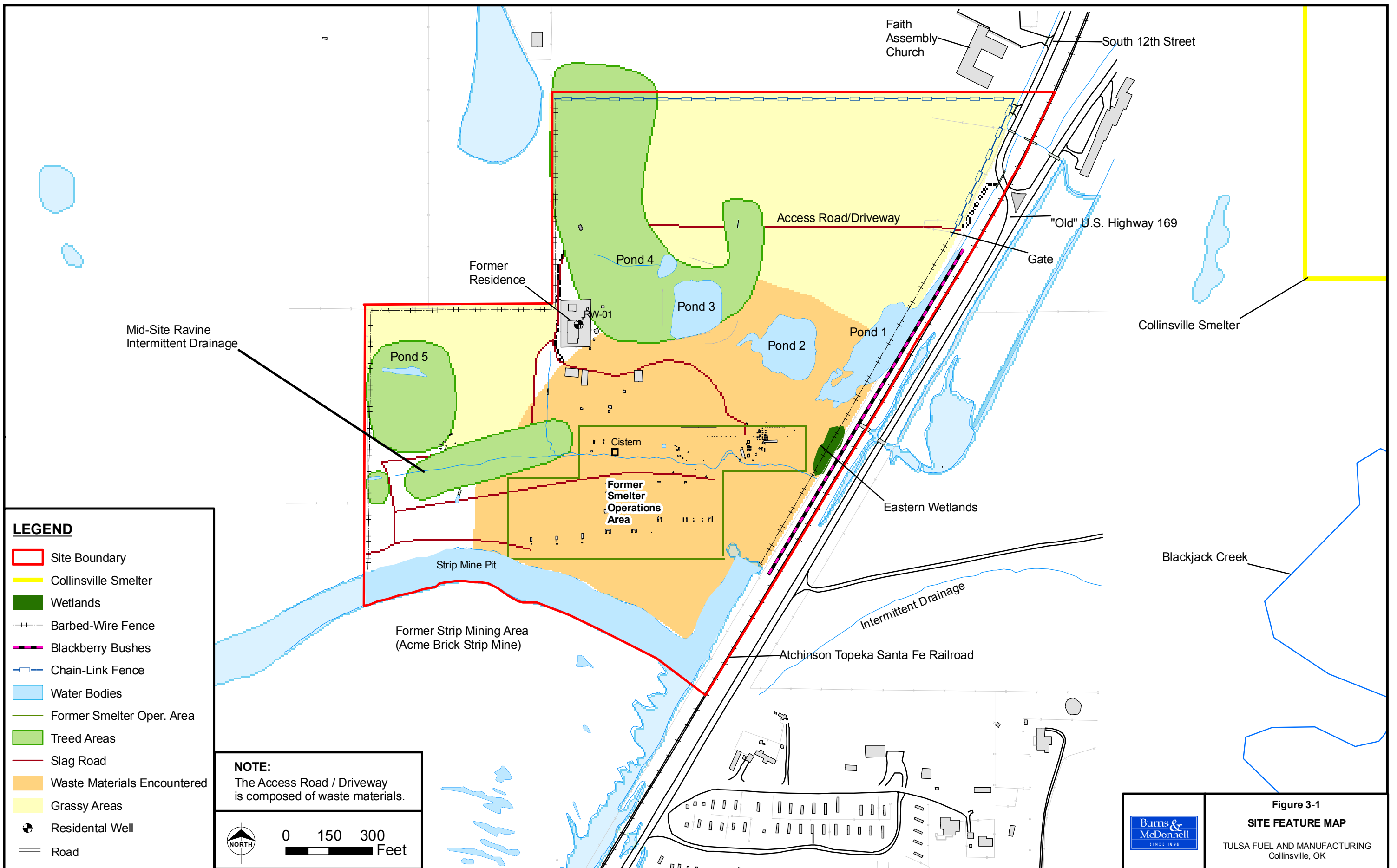




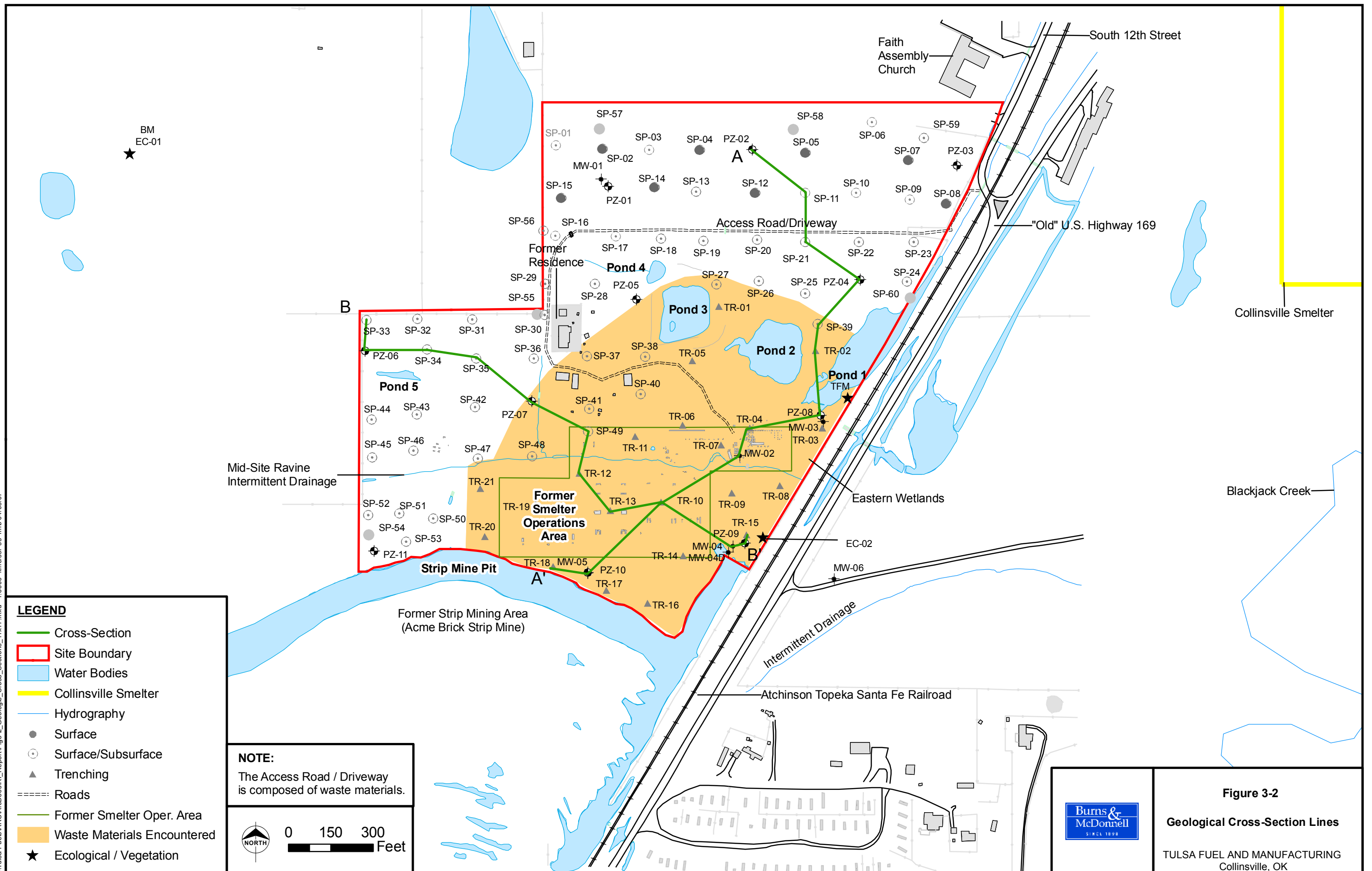
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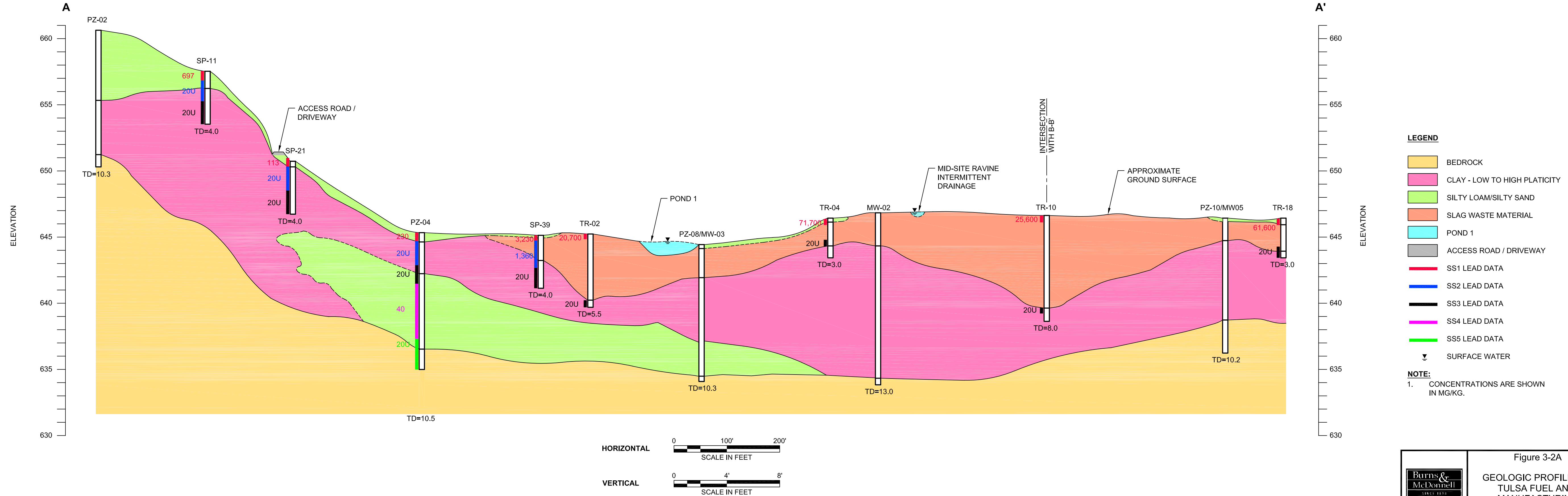
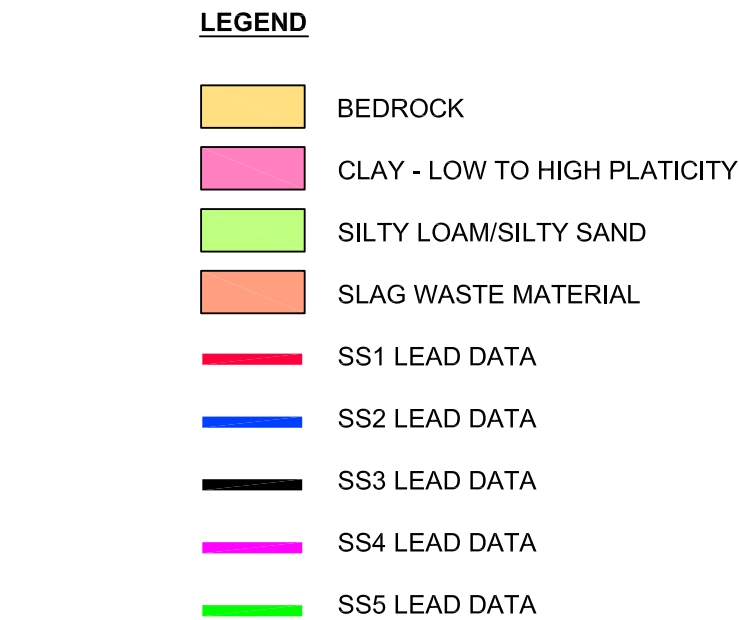
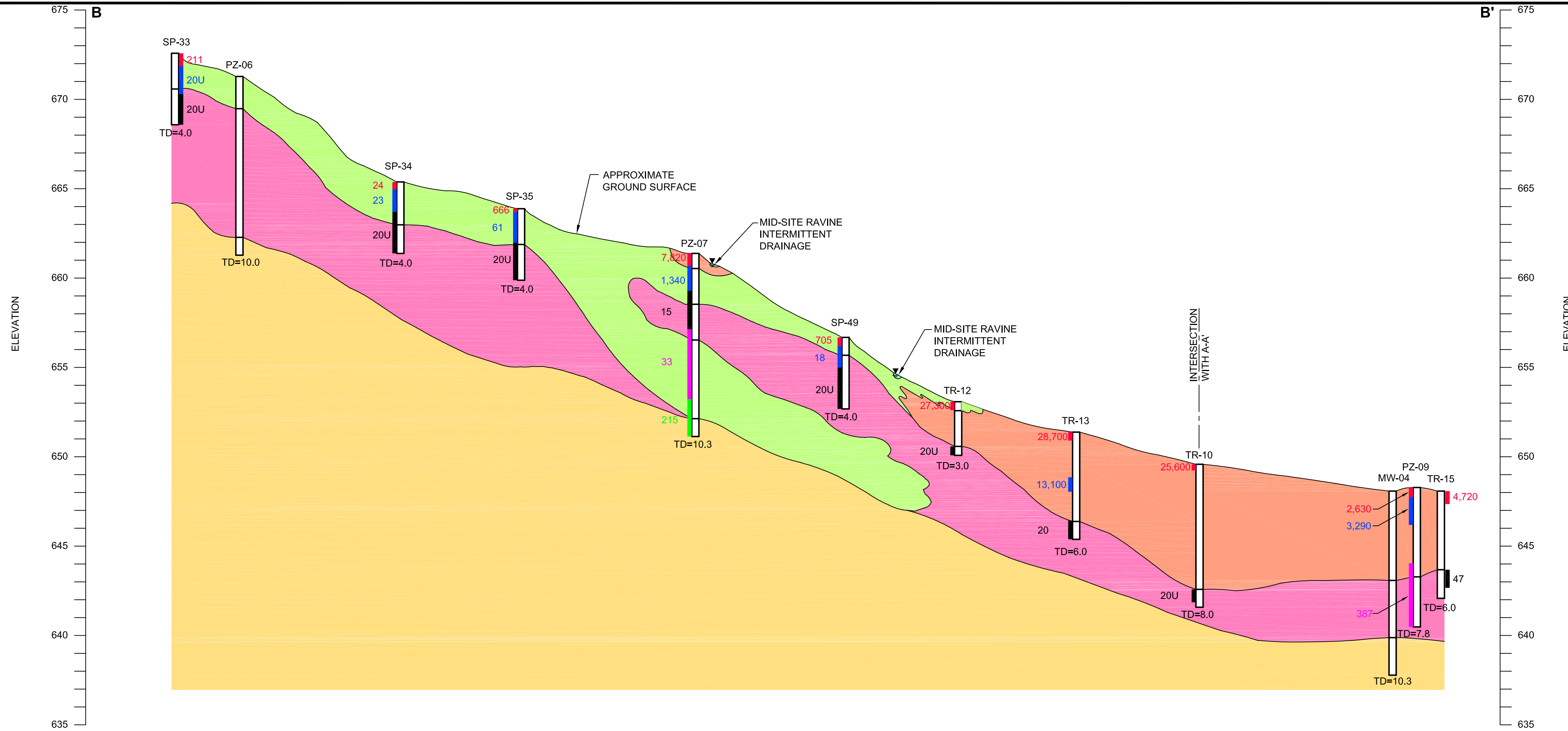


Figure 3-2A
GEOLOGIC PROFILE A-A'
TULSA FUEL AND
MANUFACTURING
COLLINSVILLE, OK



NOTE:
1. CONCENTRATIONS ARE SHOWN IN MG/KG.

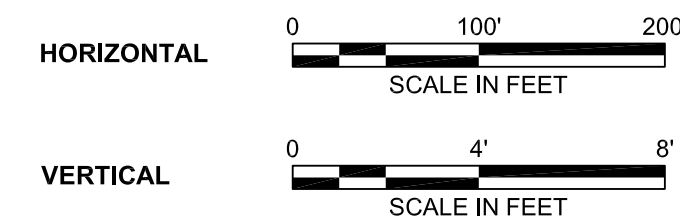
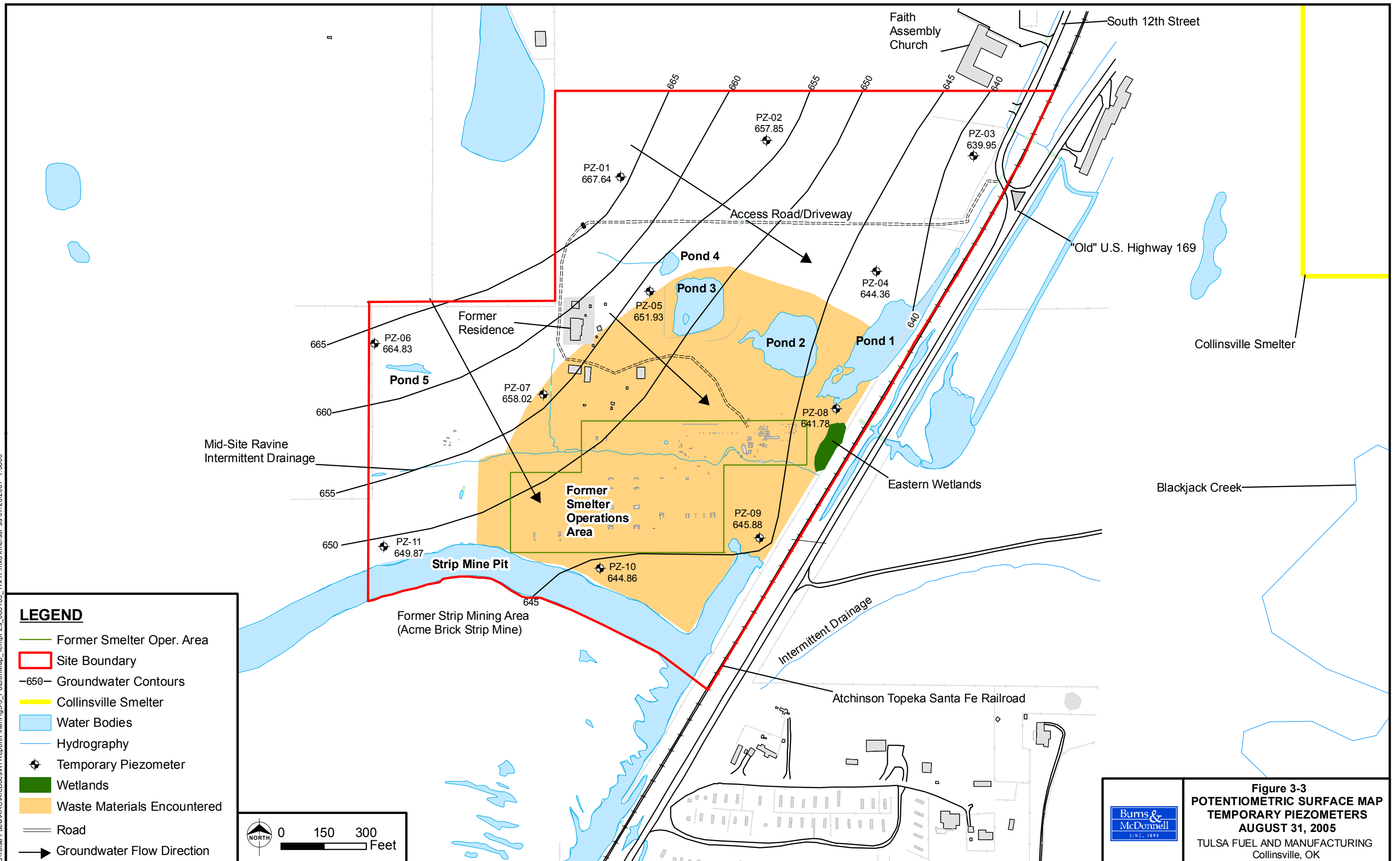


Figure 3-2B
GEOLOGIC PROFILE B-B'
TULSA FUEL AND
MANUFACTURING
COLLINSVILLE, OK



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LEGEND

- Site Boundary
- Water Bodies
- Collinsville Smelter
- Hydrography
- Wetlands
- 650 Groundwater Contours
- Former Smelter Oper. Area
- Waste Materials Encountered
- Monitoring Well
- Residential Well
- Road
- Groundwater Flow Direction

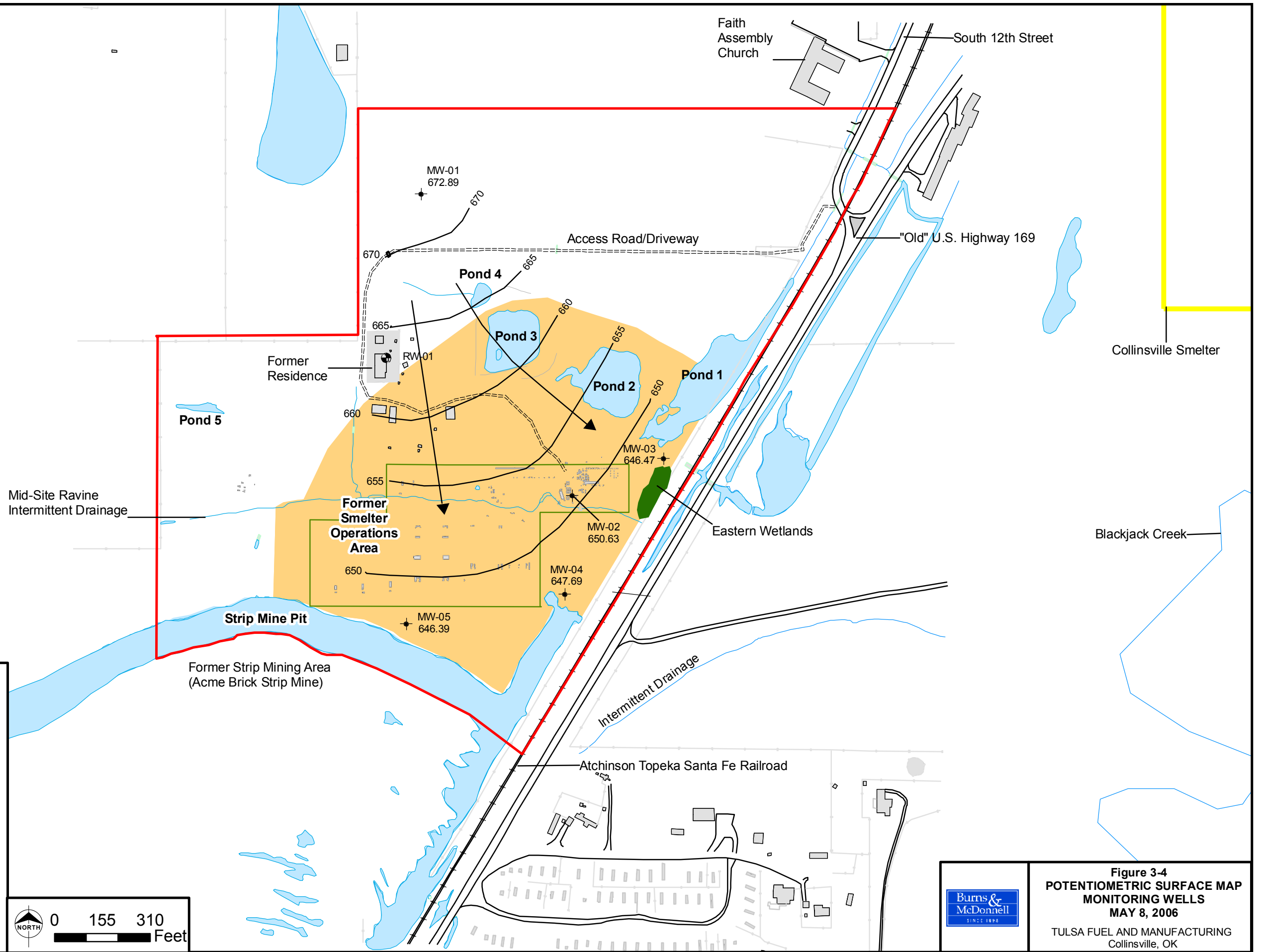
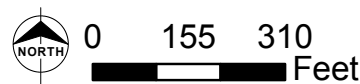
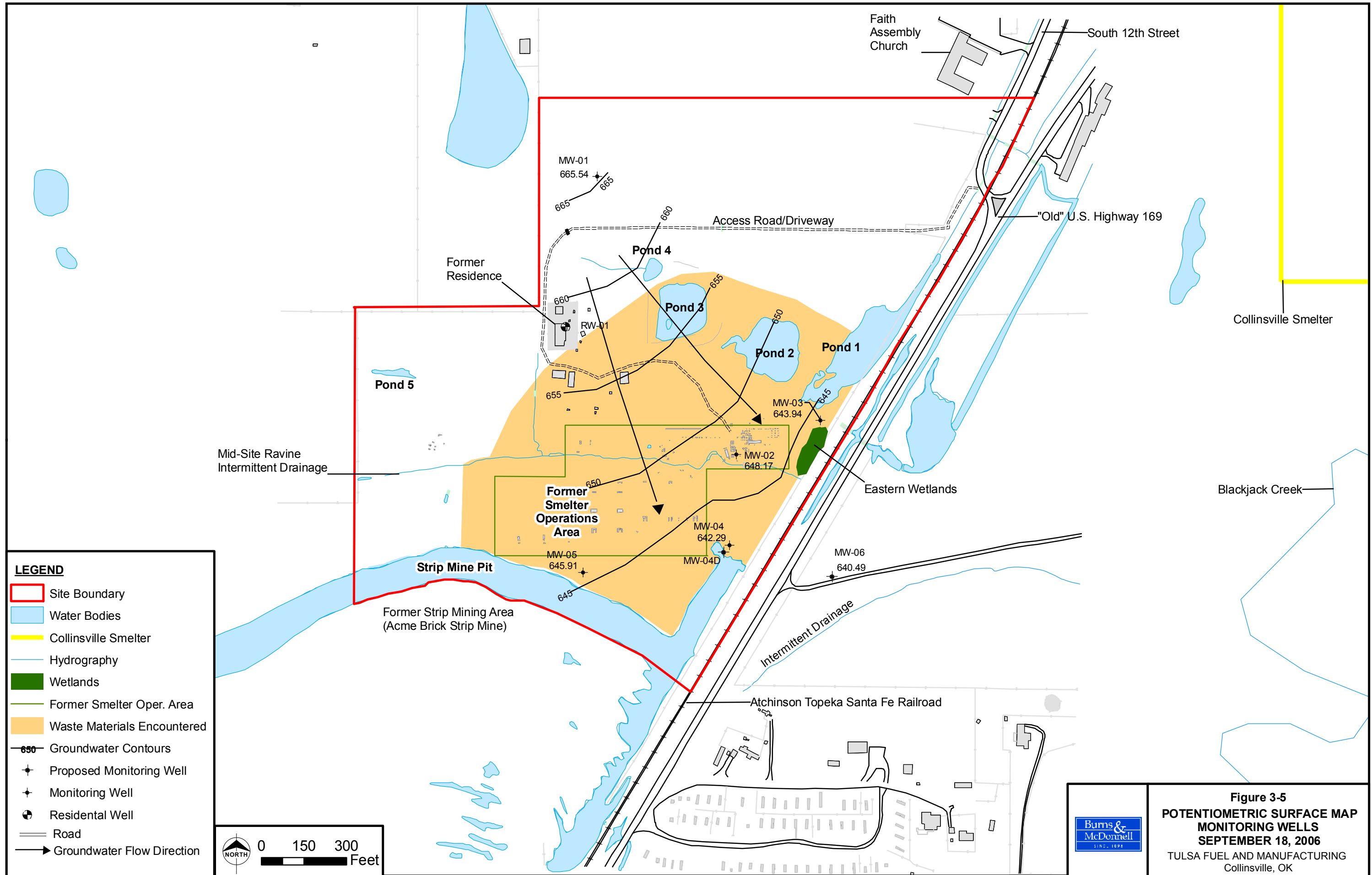
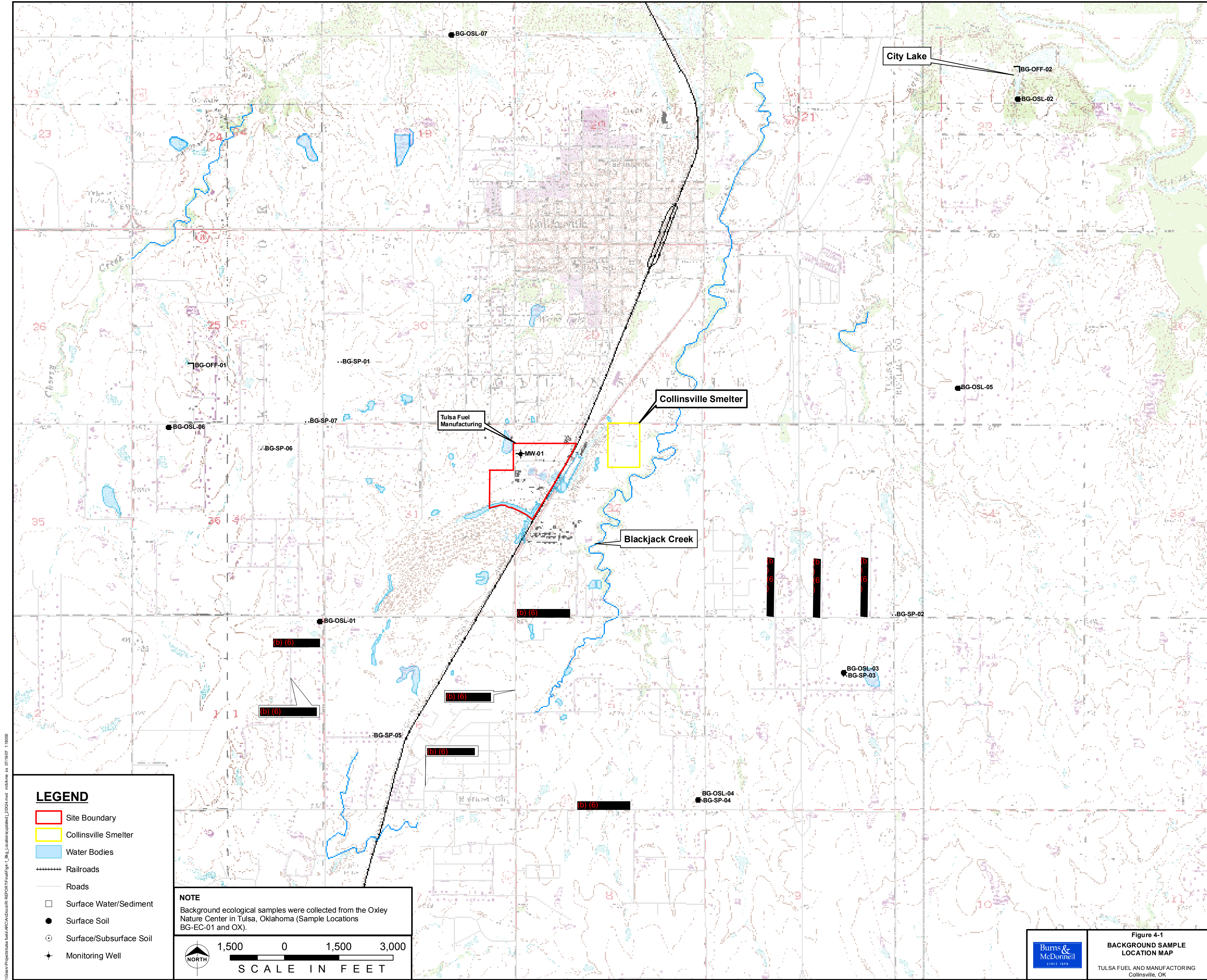


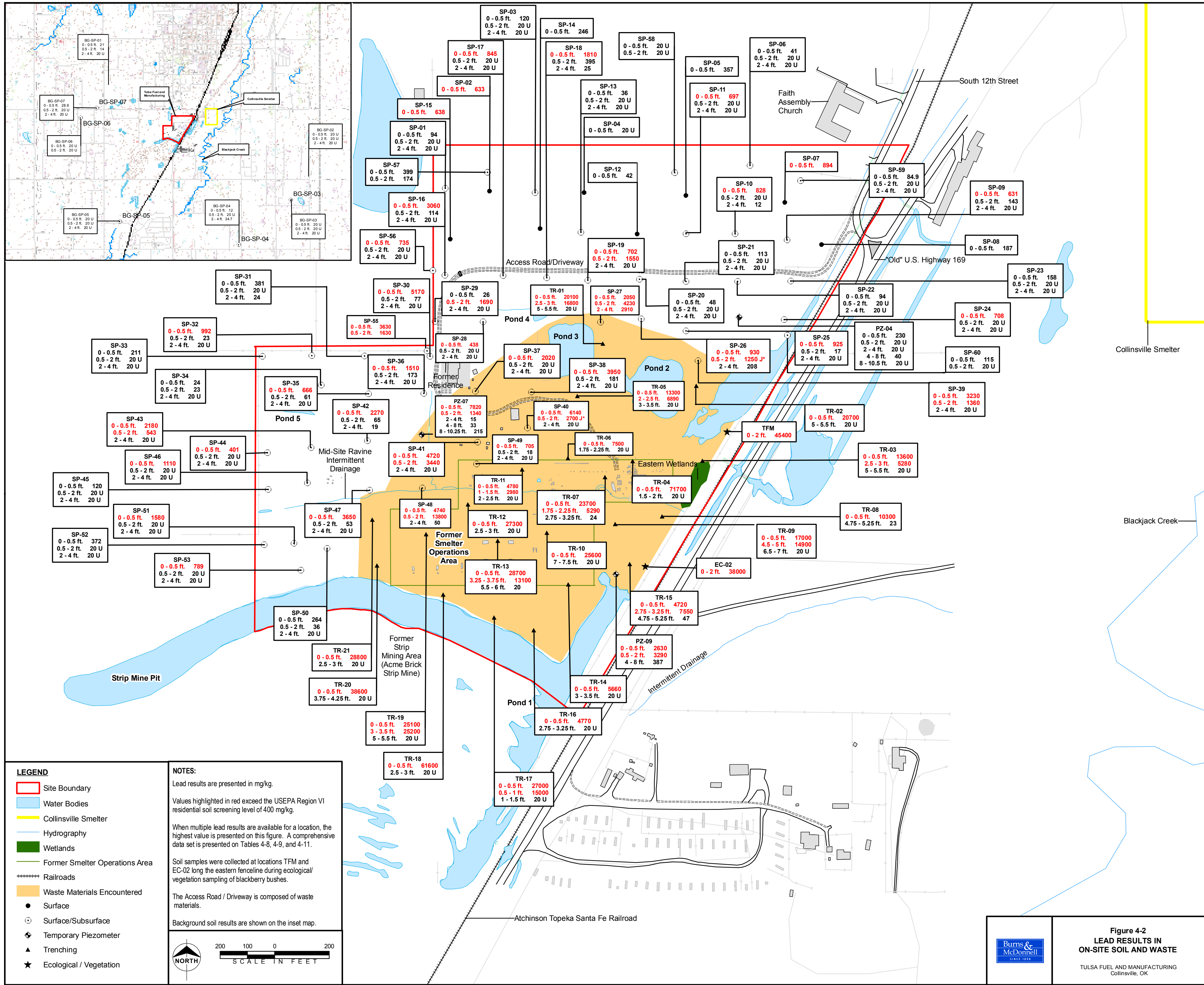
Figure 3-4
POTENTIOMETRIC SURFACE MAP
MONITORING WELLS
MAY 8, 2006
TULSA FUEL AND MANUFACTURING
Collinsville, OK

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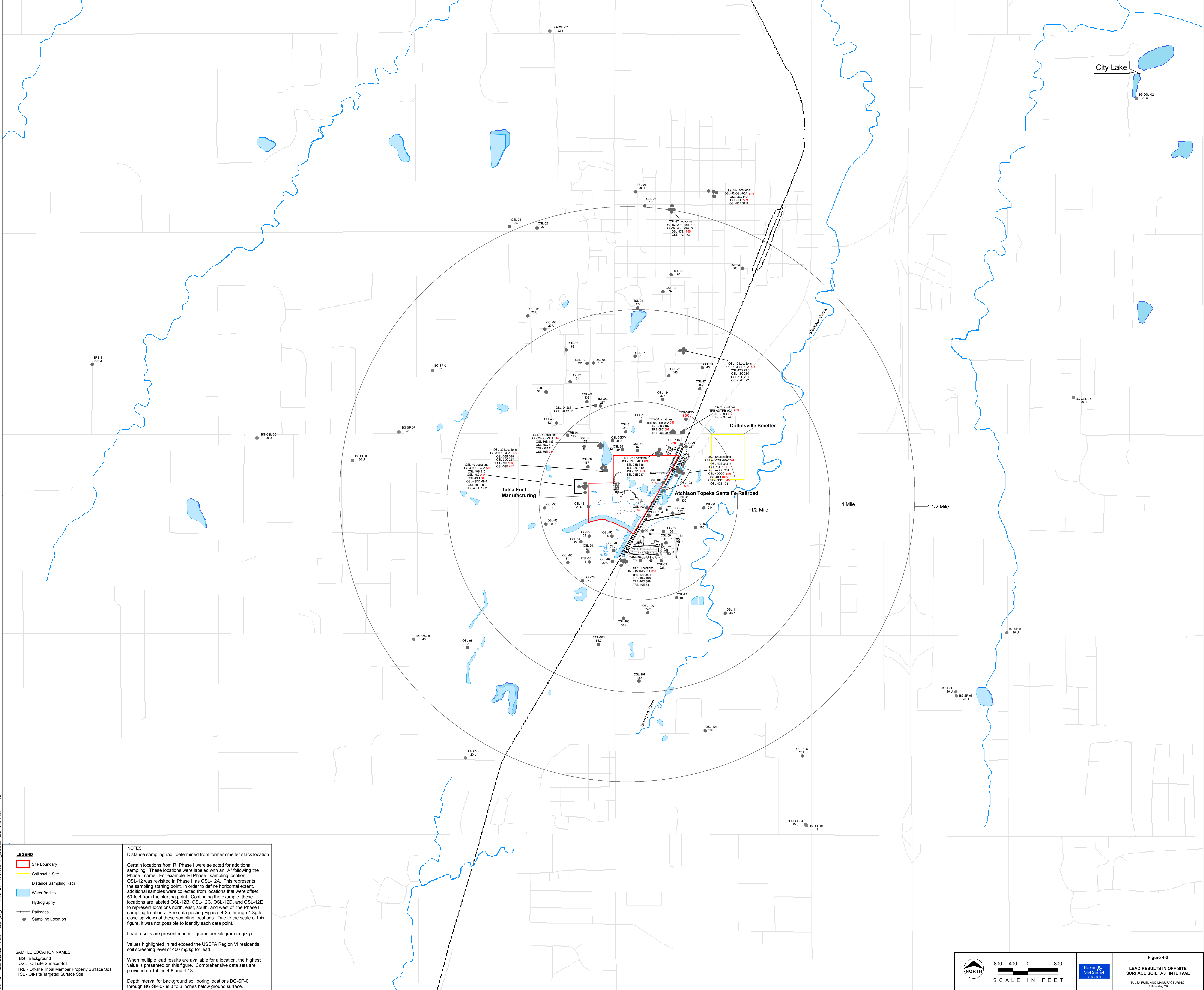




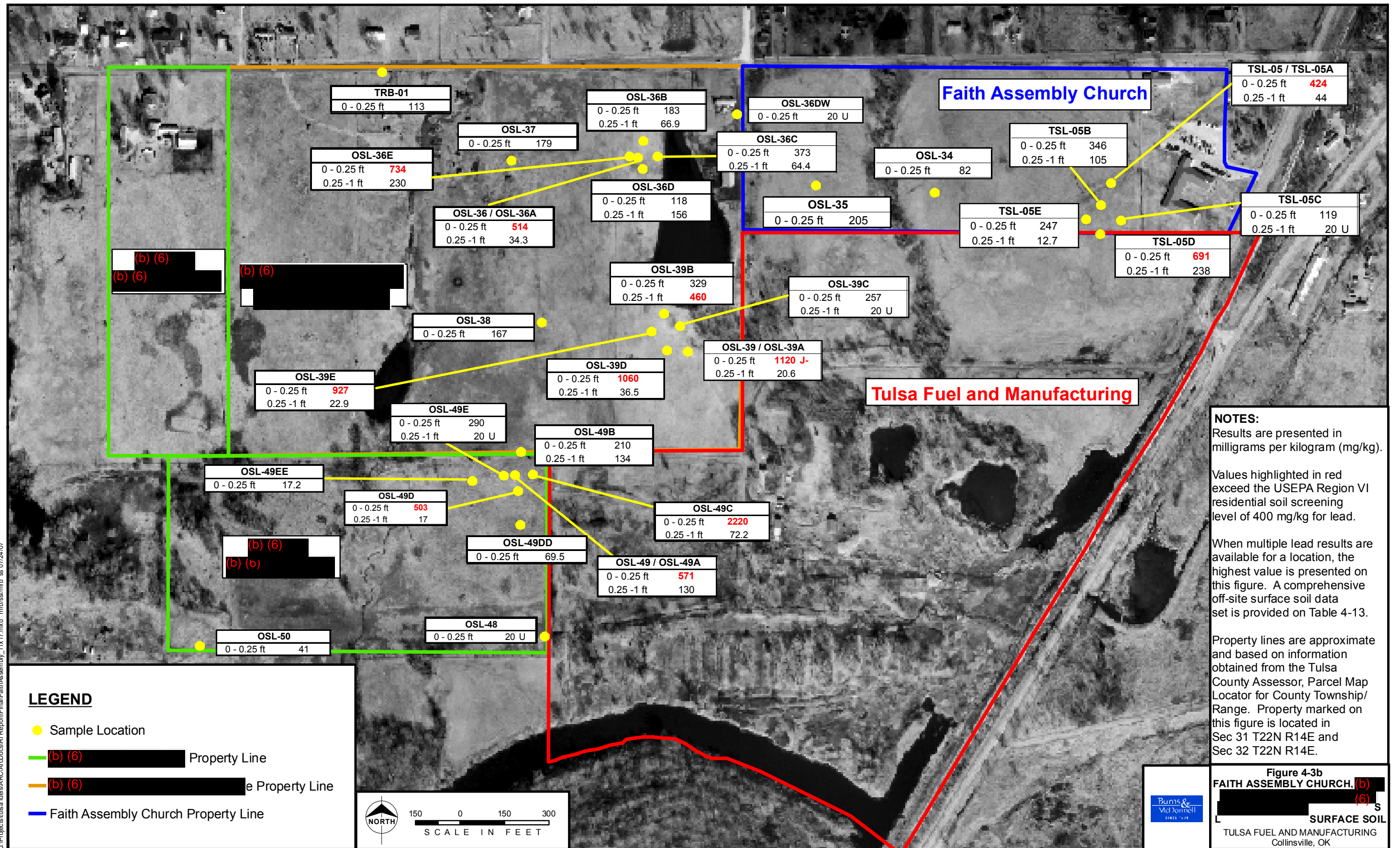
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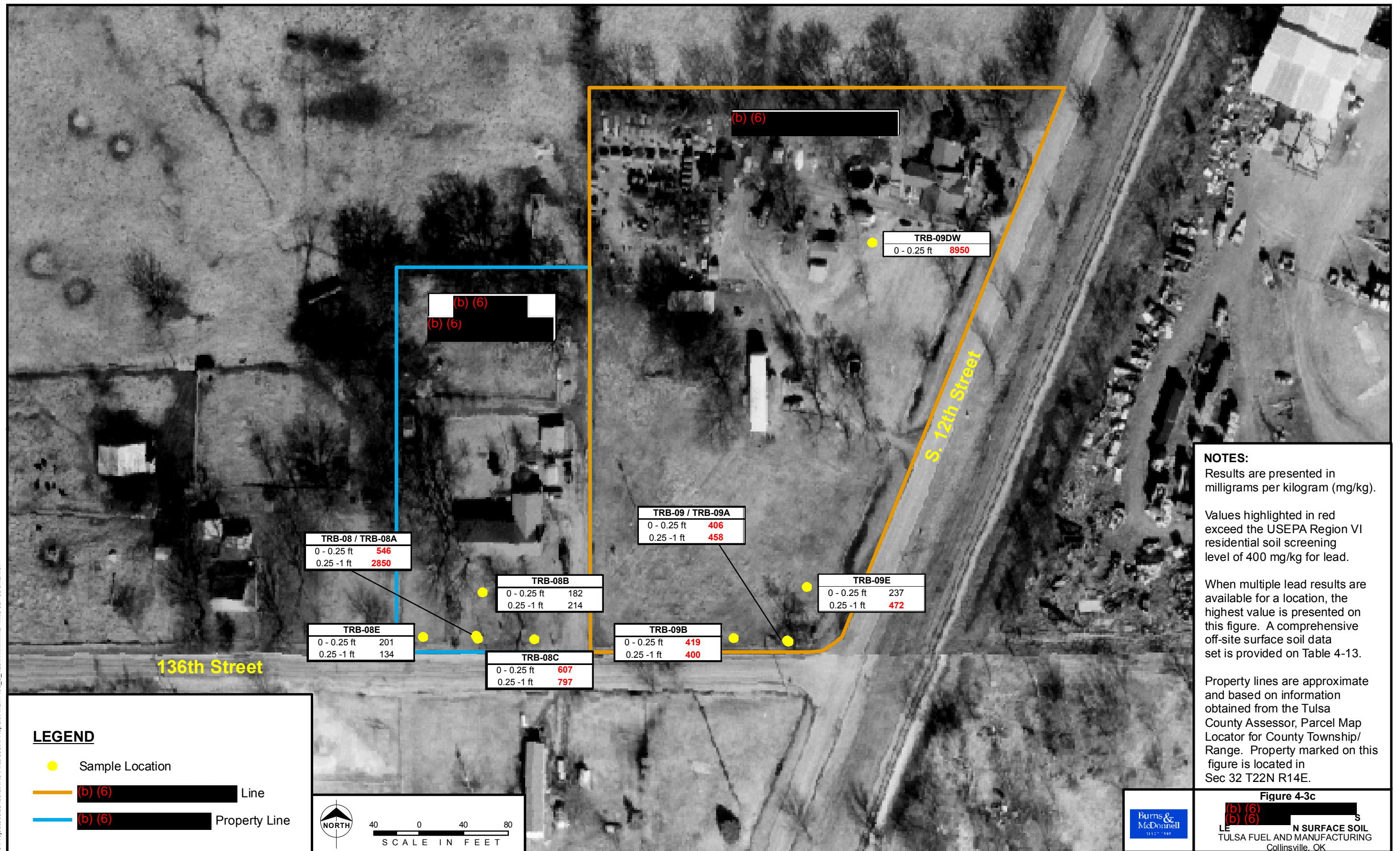
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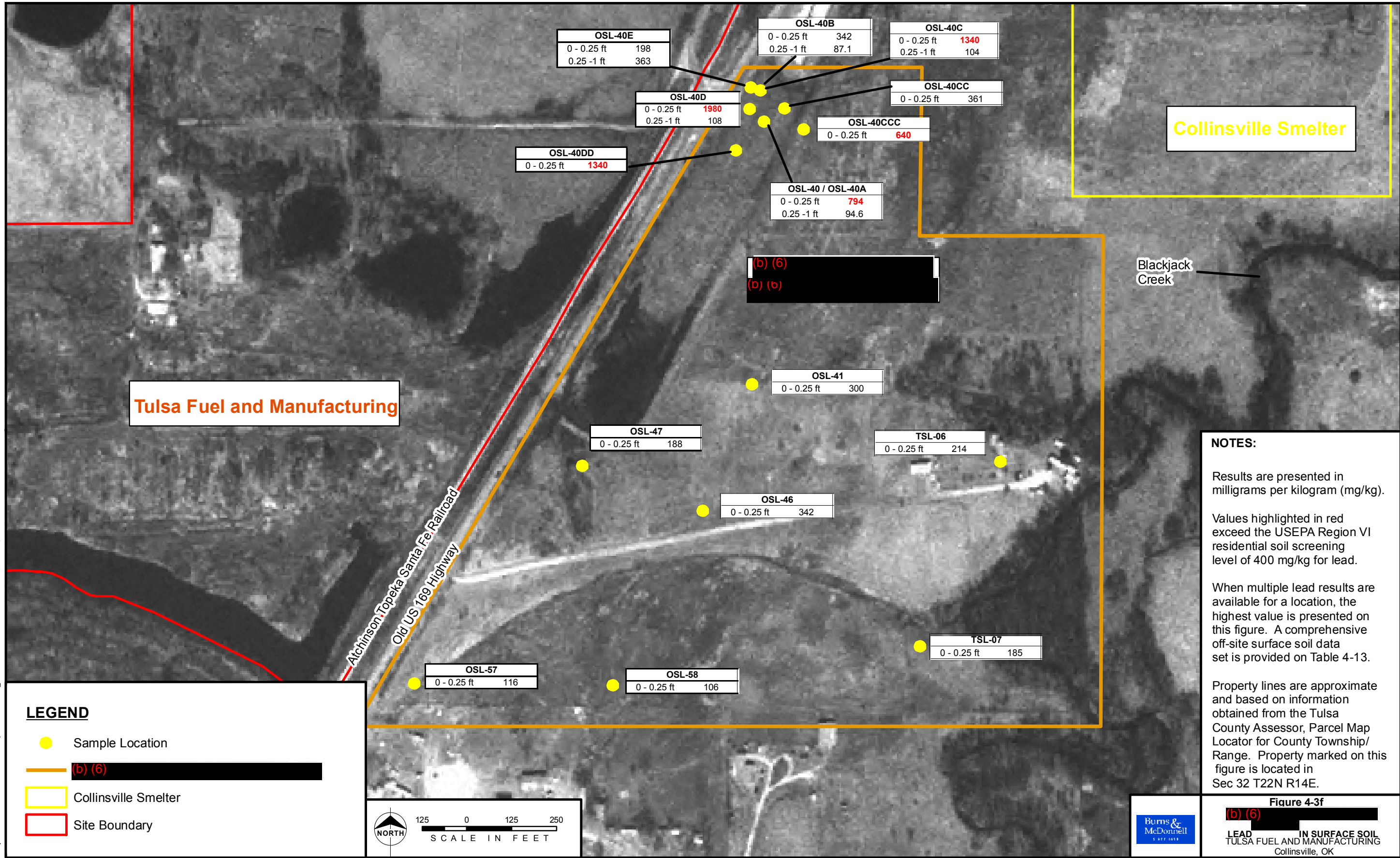


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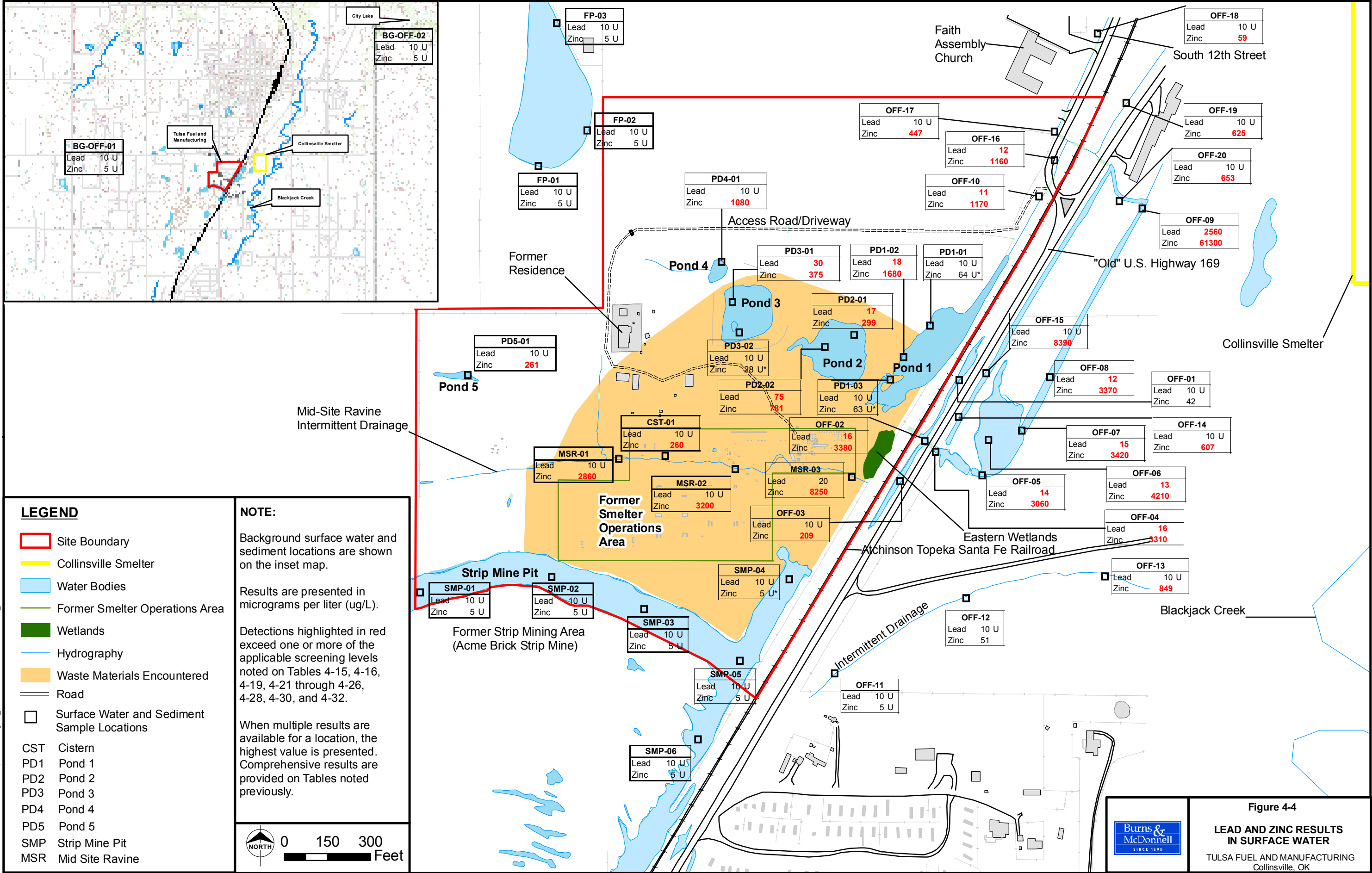




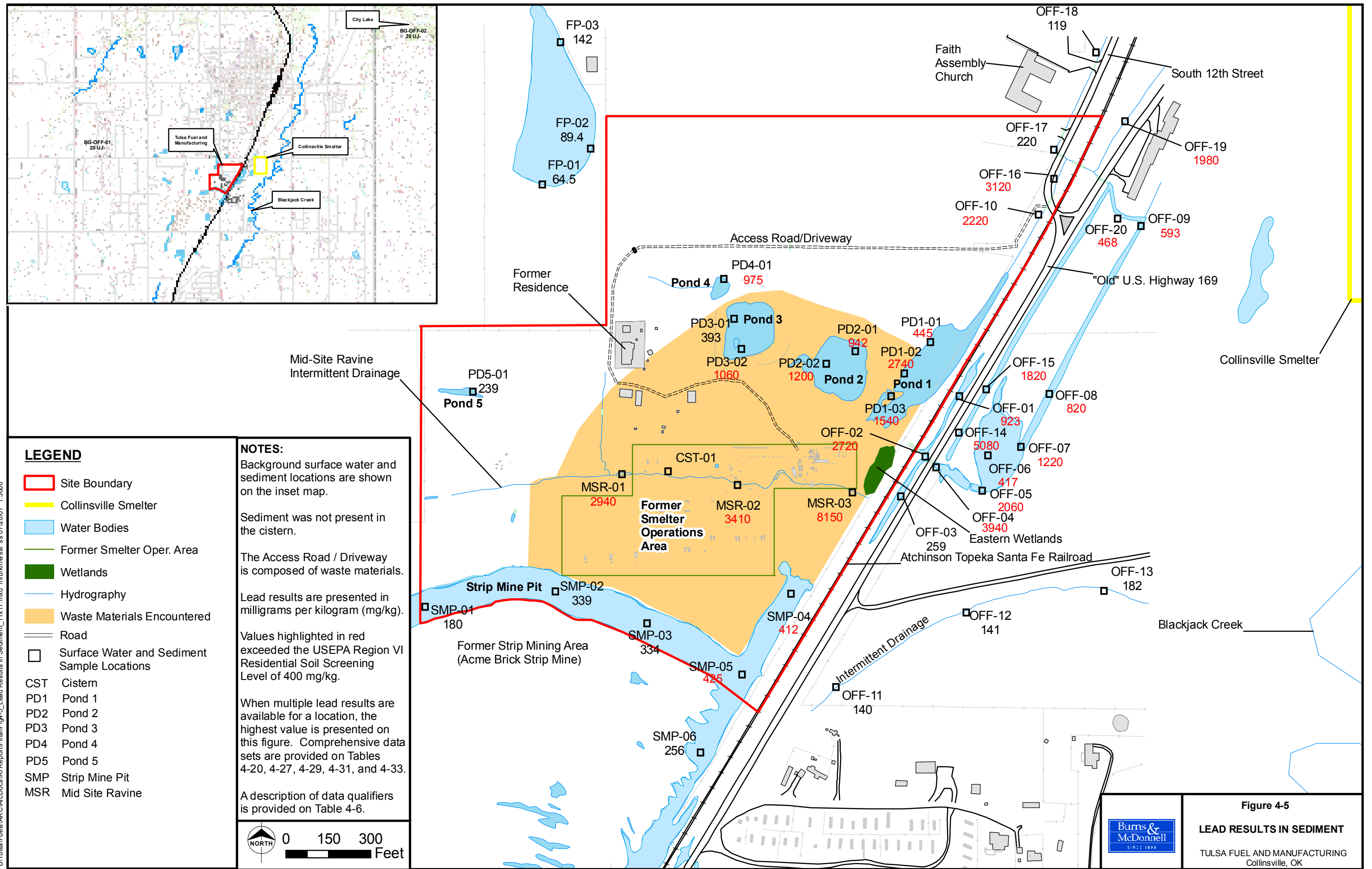
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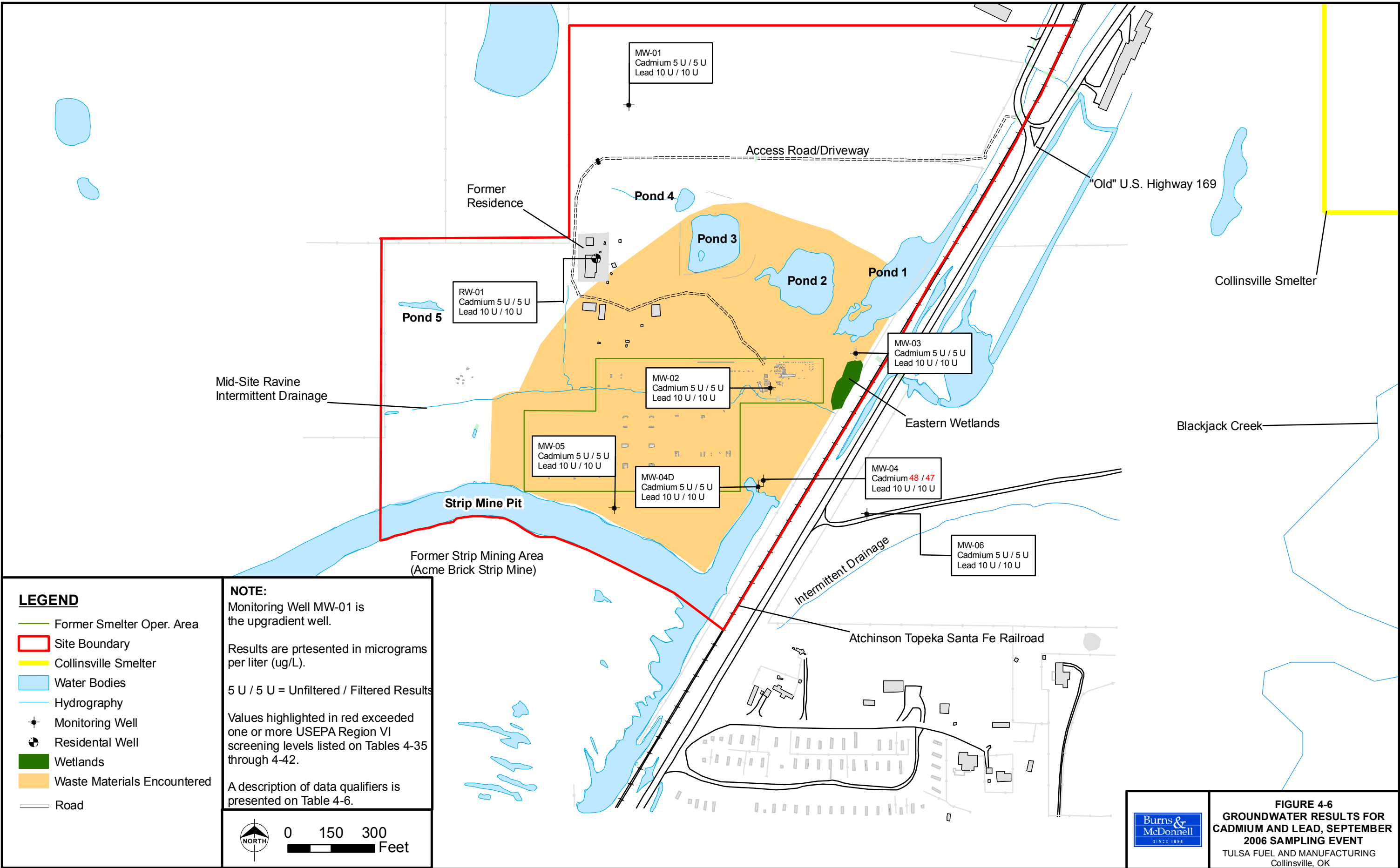
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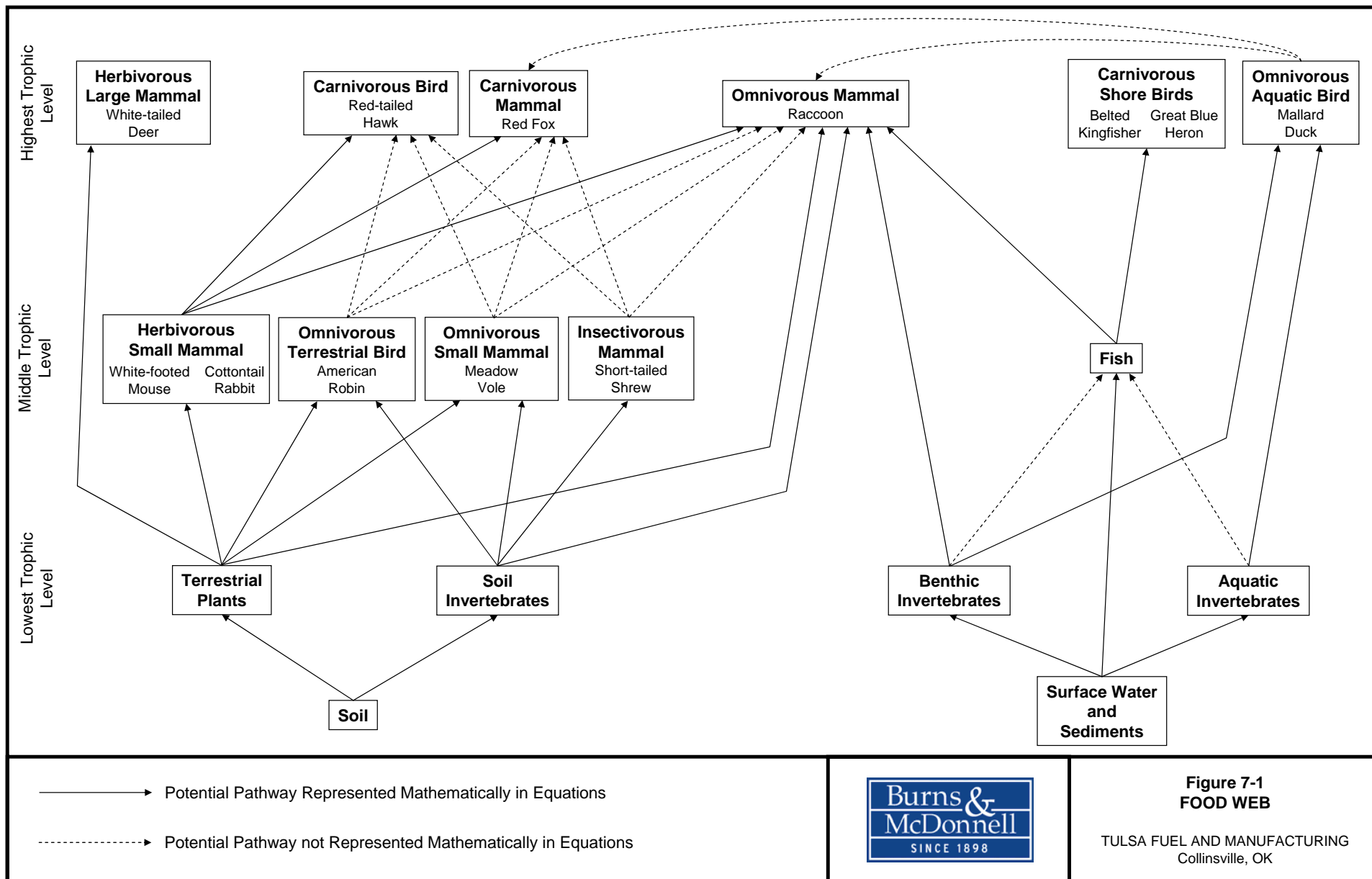


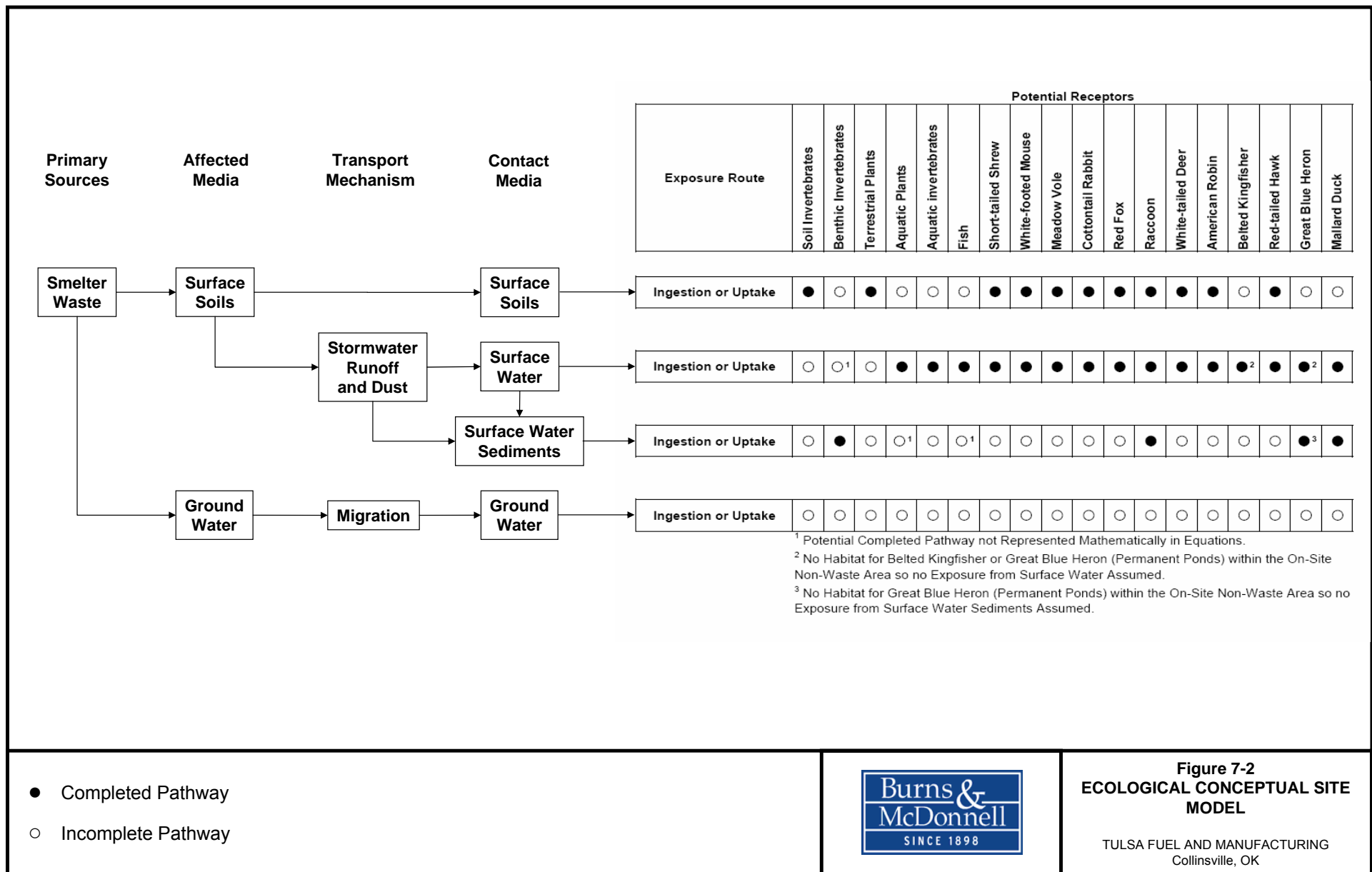
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FINAL

**REMEDIAL INVESTIGATION REPORT
FOR
TULSA FUEL AND MANUFACTURING
COLLINSVILLE, OKLAHOMA**

**VOLUME II
Appendices A – M**

August 2007

Prepared for



**Oklahoma
Department of Environmental Quality**



**Burns & McDonnell Project No. 36478
Burns & McDonnell Engineering Company
Engineers-Architects-Consultants
Kansas City, Missouri**

APPENDIX A

Historical Site Information and Previous Investigation Data

APPENDIX A-1

Sanborn Fire Insurance Map, February 1919



APPENDIX A-2

**Site Investigation Report
DEQ, 1994**

SITE INSPECTION REPORT

TULSA FUEL & MANUFACTURING

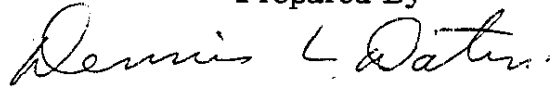
TULSA COUNTY, OKLAHOMA

CERCLA NO. OKD987096195

STATE OF OKLAHOMA

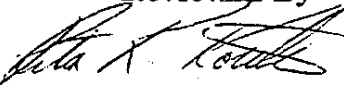
DEPARTMENT OF ENVIRONMENTAL QUALITY

Prepared By



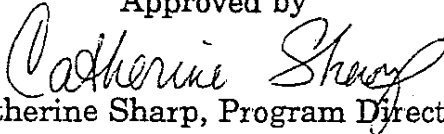
Dennis L. Datin, P.E., Environmental Engineer

Reviewed By



Rita R. Kottke, Environmental Specialist

Approved by



Catherine Sharp, Program Director

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MANUFACTURING SMELTER SITE INVESTIGATION.

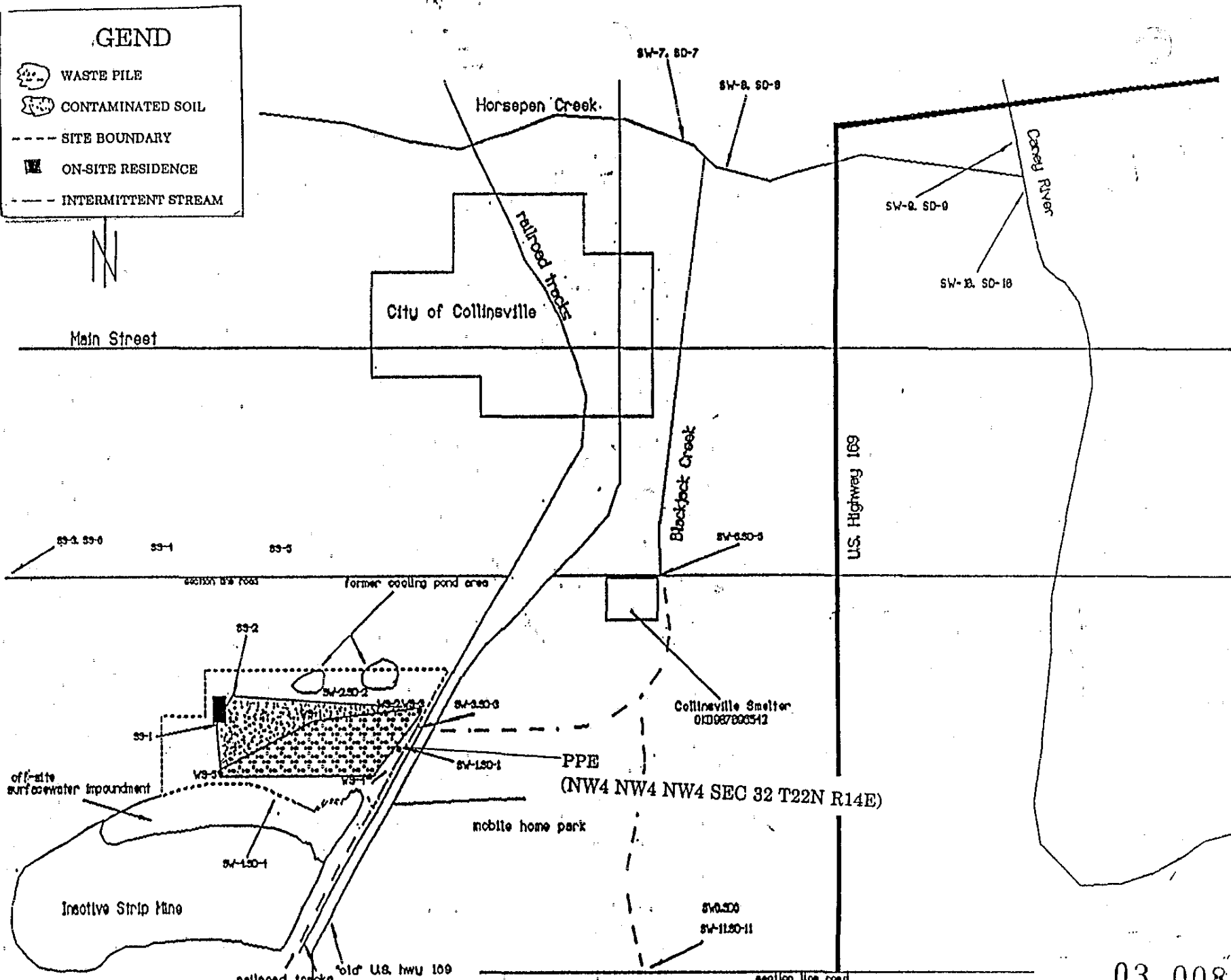


TABLE 1 SURFACE WATER (SW) and SEDIMENT (SD) SAMPLE NUMBERS AND LOCATIONS.

CLP Sample No.	Sample No.	Location
MFCE45	SW-1	Wetlands located south of surface water confluence in northeastern area of site. This location is just west of the railroad tracks at the site's eastern border.
MFCE46 lab dup: MFCE48	SW-2	Wetlands located southeast of the northwestern most on-site pond. Sample designated as lab QC sample.
MFCE38	SW-3	Located approximately three feet west of concrete drain, which is the point at which surface water from the site discharges east under the railroad and old highway 169 towards the site's PPE.
MFCE47	SW-4	Off-site surface water impoundment south of site; sample collected in north central area of impoundment from northern bank (on-site).
MFCE39	SW-5	PPE (SW4 SE4 SEC 29 T22N R14E); located immediately north of section line road at point where Blackjack Creek becomes perennial.
MFCE57	SW-6	Intermittent stream approximately one mile southeast of site (SW4 SW4 SE4 SEC 32 T22N R14E); located immediately north of section line road. Sample to be used as surface water background sample and field duplicate.
MFCE30	SW-7	Located in Horsepen Creek within surface water segment, approximately 50 feet downstream of the Horsepen Creek and Blackjack Creek confluence.
MFCE31	SW-8	Located 100 feet upstream of the confluence of Blackjack Creek and Horsepen Creek, on the south bank of Horsepen Creek.
MFCE32	SW-9	Located 200 feet upstream of the confluence of Horsepen Creek and the Caney River on the north bank of the Caney River.
MFCE33	SW-10	Located 200 feet downstream of the confluence of Horsepen Creek and the Caney River on the south bank of the Caney River within the surface water segment.
MFCE63	SW-11	Duplicate of SW-6
MFCE64	FB-1	Sample used as field blank, using deionized water.
MFCE42	SD-1	Wetlands located south of surface water confluence in northeastern area of site. This location is just west of the railroad tracks at the site's eastern border.
MFCE43	SD-2	Wetlands located southeast of the northwestern most on-site pond.
MFCE40	SD-3	Located approximately three feet west of concrete drain, which is the point at which surface water from the site discharges east under the railroad and old highway 169 towards the site's PPE.
MFCE44	SD-4	Off-site surface water impoundment south of site; sample collected in north central area of impoundment on northern bank.
MFCE41	SD-5	PPE (SW4 SE4 SEC 29 T22N R14E); located immediately north of section line road at point where Blackjack Creek becomes perennial.
MFCE56	SD-6	Intermittent stream approximately one mile southeast of site (SW4 SW4 SE4 SEC 32 T22N R14E); located immediately north of section line road. Sample to be used as sediment background sample.
MFCE34	SD-7	Located 100 feet upstream of the confluence of Blackjack Creek and Horsepen Creek, on the south bank of Horsepen Creek.
MFCE35	SD-8	Located in Horsepen Creek within surface water segment, approximately 50 feet downstream of the Horsepen Creek and Blackjack Creek confluence.
MFCE36	SD-9	Located 200 feet upstream of the confluence of Horsepen Creek and the Caney River on the north bank of the Caney River.
MFCE37	SD-10	Located 200 feet downstream of the confluence of Horsepen Creek and the Caney River on the south bank of the Caney River within the surface water segment.
MFCE49	SD-11	Duplicate of SD-2.

TABLE 1 SURFACE SOILS (SS) AND WASTE (WS) SAMPLE NUMBERS AND LOCATIONS.

CLP Sample No.	Sample No.	Location
MFCE54	SS-1	Located within on-site residence fenced yard, just southeast of house near walkway.
MFCE52	SS-2	Located within on-site residence fenced yard, in the northeast area of the yard.
MFCE50	SS-3	Off-site soil, approximately 2500 ft. northwest of site at northern edge of section line road. Sample to be used as background and duplicate.
MFCE53	SS-4	Off-site soils of Enloe residence, located north of site at 11509 E. 136th Street North.
MFCE51	SS-5	Off-site soils of Pavey residence, located north of site at 11815 E. 136th Street North.
MFCE55	SS-6	Duplicate of SS-3.
SF9255	WS-1	Waste sampled at depth of 0 - 2", located in the central area of the site, between northwestern pond and building foundation.
SF9256	WS-2	Waste sampled at depth of 0 - 2", located in northeastern area of site, south of northeastern pond.
SF9257	WS-3	Duplicate of WS-2.
SF9258	WS-4	Waste sampled at depth of 0 - 2", located in southeastern area of site.
SF9259	WS-5	Waste sampled at depth of 0 - 2", located in southwestern area of site.

TABLE 3. ANALYTICAL RESULTS FOR WASTE SAMPLES IN PPM COLLECTED ON MARCH 14, 1994.

Station No.	WS-1	WS-2	WS-3	WS-4	WS-5
CLP Sample No.	SF9255	SF9256	SF9257	SF9258	SF9259
Total Metals	Concentration (ppm)	Concentration (ppm)	Concentration (ppm)	Concentration (ppm)	Concentration (ppm)
Aluminum	7190 J	8660 J	7730 J	8440 J	6550 J
Antimony	12.6 UC	22.2 UC	17.6 UC	20.8 UC	15.8 UC
Arsenic	112	172	168	302	255
Barium	173	166	178	105	93.8
Beryllium	0.65	0.58	0.52	0.67	0.47
Cadmium	204	95.3	79.8	275	41.1
Calcium	4510	3910	3580	2680	1720
Chromium	25 UJ	23 UJ	22.8 UJ	22 UJ	23 UJ
Cobalt	43.1	37.5	35.5	21.1	29.1
Copper	475	1380	1290	1050	1670
Iron	76600	103000 J	104000 J	51700 J	71600 J
Lead	3810	13500	13000	10000	16600
Magnesium	1260	1470	1390	1270	1070
Manganese	14400	24700 J	21600 J	4420 J	7400 J
Mercury	0.15	0.11 U	0.11 U	0.26	0.11 U
Nickel	52.4	45.1	41.9	104	102
Potassium	468	236	216	461	295
Selenium	0.5 UJ	0.46 UJ	0.46 UJ	0.44 UJ	0.46 UJ
Silver	33.9	31.8	33.4	29.5	52.6
Sodium	2030	1380	1670	1800	993
Thallium	0.75 UJ	0.68 UJ	0.68 UJ	0.66 UJ	0.69 UJ
Vanadium	31.6	32.3	30.7	31.8	25.3
Zinc	23100 J	27900 J	37000 J	28700 J	10900 J
% Solids	79.9	87.8	87.7	91.1	87.1

U = Undetected

J = Estimated Value

UJ = Estimated detection limit due to outlying QC parameters

UC = Undetected at the listed detection limit which was raised due to apparent blank contamination

TABLE 4: ANALYTICAL RESULTS IN PPB FOR AQUEOUS SAMPLES COLLECTED ON MARCH 14, 1994.

Station No.	SW-1	SW-2	LAB DUPLICATE	SW-3	SW-4	SW-5	SW-6*	SW-7	SW-8	SW-9	SW-10	SW-11	FB-1	Three times background
CLP Sample No.	MFCE-45	MFCE-46	MFCE-48	MFCE-38	MFCE-47	MFCE-39	MFCE-57	MFCE-30	MFCE-31	MFCE-32	MFCE-33	MFCE-63	MFCE-64	
Aluminum	35 U	82.9	154	35 U	642	701	503	1310	1080	1140	2050	489	35 U	1,509.00
Antimony	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	43 U	129.00
Arsenic	2 U	2 U	3.2 J	2 UJ	2 UJ	2 UJ	2 U	2 U	2 U	2 UJ	2 UJ	2 UJ	2 U	6.00
Barium	19.6	48.5	46.7	19	38.7	54	63.2	70.6	70.6	83.5	101	763.8	2 U	189.60
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.00
Cadmium	58.3	22.2	18.4	56.3	5	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	12.00
Calcium	95800	28300	28000	91900	114000	60800	23800	29900	30700	43000	43900	24300	47.6 UC	71,400.00
Chromium	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	24.00
Cobalt	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U	21.00
Copper	5 U	8.8	5 U	5 U	13.8	21.3	10	18.8	16.2	13.7	7.5	11.2	5 U	30.00
Iron	19.1	251	376	28.6	752	870	614	2130	1810	1980	3670	699	8 U	1,842.00
Lead	4.9 UC	23.9	28.4	10 UC	31.8	5.5 UCJ	5.8 UC	4.9 UC	3.6 UC	6.4 UC	9.1 UC	5.4 UC	2 U	17.40
Magnesium	40300	10100	9850	37900	49800	20000	6510	11300	11600	8340	8610	6680	22 U	19,530.00
Manganese	5 U	97.6	103	20.7	300	262	69.5	229	225	154	242	91.7	5 U	208.50
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	208.50
Nickel	9 U	9 U	9 U	9 U	12.7 UC	12.2 UC	9 U	10 UC	9 U	9 U	9.5 UC	9 U	9 U	27.00
Potassium	4230	4330	4630	3870	4140	2770	1950	2720	2990	2460	2370	1880	780 U	5,850.00
Selenium	20 UJ	2 UJ	2 UJ	20 UJ	20 U	20 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 U	6.00
Silver	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3.2 UC	9.00
Sodium	41500	31100	30300	41000	45600	24200	20000	19800	20700	25500	25800	20500	143 UC	60,000.00
Thallium	2 U	2 UJ	2 UJ	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 UJ	2 UJ	2 U	6.00
Vanadium	9 U	9 U	9 U	9 U	12	9 U	9 U	9 U	9 U	9 U	9 U	9 U	9 U	27.00
Zinc	2130	845	831	2460	219	107	34.5	236	21.3	27.6	57.4	30.3	4.5	103.50
% Solids	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00

U = Undetected
 J = Estimated Value
 UJ = Estimated detection limit due to outlying QC parameters
 UC = Undetected at the listed detection limit which was raised due to apparent blank contamination
 * = Sample Background

TABL TOTAL METALS ANALYTICAL RESULTS IN FOR SEDIMENT SAMPLES COLLECTED ON H 14, 19
(Reference 13).

Station No.	SD-1	SD-2	SD-3	SD-4	SD-5	SD-6*	3 X BG	SD-7	SD-8	SD-9	SD-10	SD-11
CLP Sample No.	MFCE-42	MFCE-43	MFCE-40	MFCE-44	MFCE-41	MFCE-56		MFCE-34	MFCE-35	MFCE-36	MFCE-37	MFCE-49
Aluminum	11900	19700	6700	13700	5900	9720	29,160	10100	10500	3870	5560	12800
Antimony	20.3 U	12.3 U	50.9	11.4 U	12 U	11.2 U	34	11.3 U	13 U	10.5 U	10.5 U	12.6 U
Arsenic	87.2	7.8	514	18.5	3.9	23.1	69	22.4	13.5	2.8	3.3	8.7
Barium	92.4	1165	97.1	1327	88.3	361	1,083	2007	134	40.2	56	101
Beryllium	0.85	1.3	0.75	0.98	0.57	2.4	7	2.6	1.5	0.24 U	0.33	0.8
Cadmium	1833	13.9	86.5	57.1	3.2	1 U	3	1 U	1.2 U	0.98 U	1.4	12.6
Calcium	4490	2420	6120	2470	2590	2590	7,770	2250	3110	1120	1610	2550
Chromium	11.5	27.6	9.5	17.2	9.9	28.9	87	26.3	21.9	5.4	7.7	15.6
Cobalt	13.4	10.4	9.8	10	9.2	43.9	132	23.6	11.5	4.6	5	7.6
Copper	405	28.4	1190	1088	22.7	28.7	86	28.7	23.8	6.9	5.9	22.2
Iron	36900	34900	93500	21400	12900	92400	277,200	75700	39800	8530	10500	21300
Lead	6280	160	25400	928	228	94	282	24.1	37.9	6	13.6	183
Magnesium	2180	2210	2860	1780	1150	1960	5,880	1930	2100	682	973	1620
Manganese	3340	6946	4550	741	8156	2760	8,280	1160	501	260	306	472
Mercury	0.72	0.14 U	0.16 U	1.4	0.14 U	0.13 U	0	0.13 U	0.15 U	0.12 U	0.12 U	0.15 U
Nickel	36	18.4	39.2	16.5 UC	20.4	40	120	48.8 UC	28.7 UC	8.4	9.8	11.3
Potassium	988	1170	498	850	632	1010	3,030	820	964	553	729	792
Selenium	0.95 UJ	0.74 J	6.4 UJ	0.53 U	0.56 UJ	0.52 UJ	2	0.52 UJ	0.61 UJ	0.49 UJ	0.49 UJ	0.58 U
Silver	20.9	3.8	70.5	4.8	2.9	7.7	23	8.4	3.3	0.73 UJ	0.73 U	2.5
Sodium	470	430	437	265	197	197	591	200	243	151	140	366
Thallium	0.95 UJ	0.57 UJ	0.64 UJ	0.53 UJ	0.56 UJ	0.52 UJ	2	6.00 UJ	18.00 U	54.00 U	0.49 UJ	0.58 U
Vanadium	25	51.5	59.1	34.3	17.2	86.7	260	73	43.4	12.6	14.9	33.9
Zinc	22900	1590	20700	5930	402	4110	12,330	134	94.5	40	63.6	1150
% Solids	42.3	69.8	62.6	75.5	71.8	77	231	76.3	66	81.7	82	68.4

U = Undetected
J = Estimated Value
UJ = Estimated detection limit due to outlying QC parameters
UC = Undetected at the listed detection limit which was raised due to apparent blank contamination
* = Sample Background

TABLE 6. TOTAL METAL ANALYTICAL RESULTS IN PPM FOR SOIL SAMPLES COLLECTED ON MARCH 14, 1994.

Station No.	SS-1	SS-2	SS-3	Three times background	SS-4	SS-5	SS-6
P Sample No.	MFCE-54	MFCE-52	MFCE-50		MFCE-53	MFCE-51	MFCE-55
Aluminum	5770	9980	8170	24,510.00	7100	9060	10500
Antimony	12.5 U	10.7 U	10.6 U	31.80	11.1 U	11.3 U	10.5 U
Arsenic	18.5	26.7	8.1	24.30	13.7	10.4	7.2
Barium	124	141	63.3	189.90	68.5	173	63.2
Beryllium	0.4	0.79	0.44	1.32	0.49	0.51	0.5
Cadmium	65.4	70.1	4.2	12.60	6.2	4.2	2.8
Calcium	8160	4680	1310	3,930.00	2460	20800	1280
Chromium	10.8	13.4	9.2	27.60	10.2	13.1	11.1
Cobalt	4.4	6.2	5.4	16.20	6.8	3.8	6.3
Copper	130	126	17.2	51.60	67.9	36.7	13.2
Iron	15000	22300	13900	41,700.00	20700	14900	19100
Lead	1160	1700	191	573.00	362	226	193
Magnesium	1270	1350	1050	3,150.00	1290	1670	1220
Manganese	691	1060	384	1,152.00	548	521	373
Mercury	0.28	0.12 U	0.12 U	0.36	0.13 U	0.18	0.12 U
Nickel	13	15.6	11.3	33.90	13.4	16.1	13.7
Potassium	809	1310	624	1,872.00	848	1680	826
Selenium	5.8 UJ	0.5 UJ	0.49 UJ	1.47	0.51 UJ	0.55	0.49 U
Silver	5.1	6.3	2.6	7.80	4	3.3	2.3
Sodium	351	196	147	441.00	151	178	151
Thallium	0.58 U	0.5 U	0.49 U	1.47	0.51 U	0.55	0.49 U
Vanadium	19.2	24.8	18.4	55.20	15.1	19.9	24.1
Zinc	10700	6770	53400	160,200.00	892	786	525
% Solids	68.7	80.5	81.1	243.30	77.8	76.8	81.6

U = Undetected

J = Estimated Value

UJ = Estimated detection limit due to outlying QC parameters

UC = Undetected at the listed detection limit which was raised due to apparent blank contamination

* = Sample Background

APPENDIX A-3

Public Health Assessment ATSDR, 2000

PUBLIC HEALTH ASSESSMENT
TULSA FUEL AND MANUFACTURING
COLLINSVILLE, TULSA COUNTY, OKLAHOMA

EPA FACILITY ID: OKD987096195

July 27, 2000

Prepared by:
Superfund Site Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

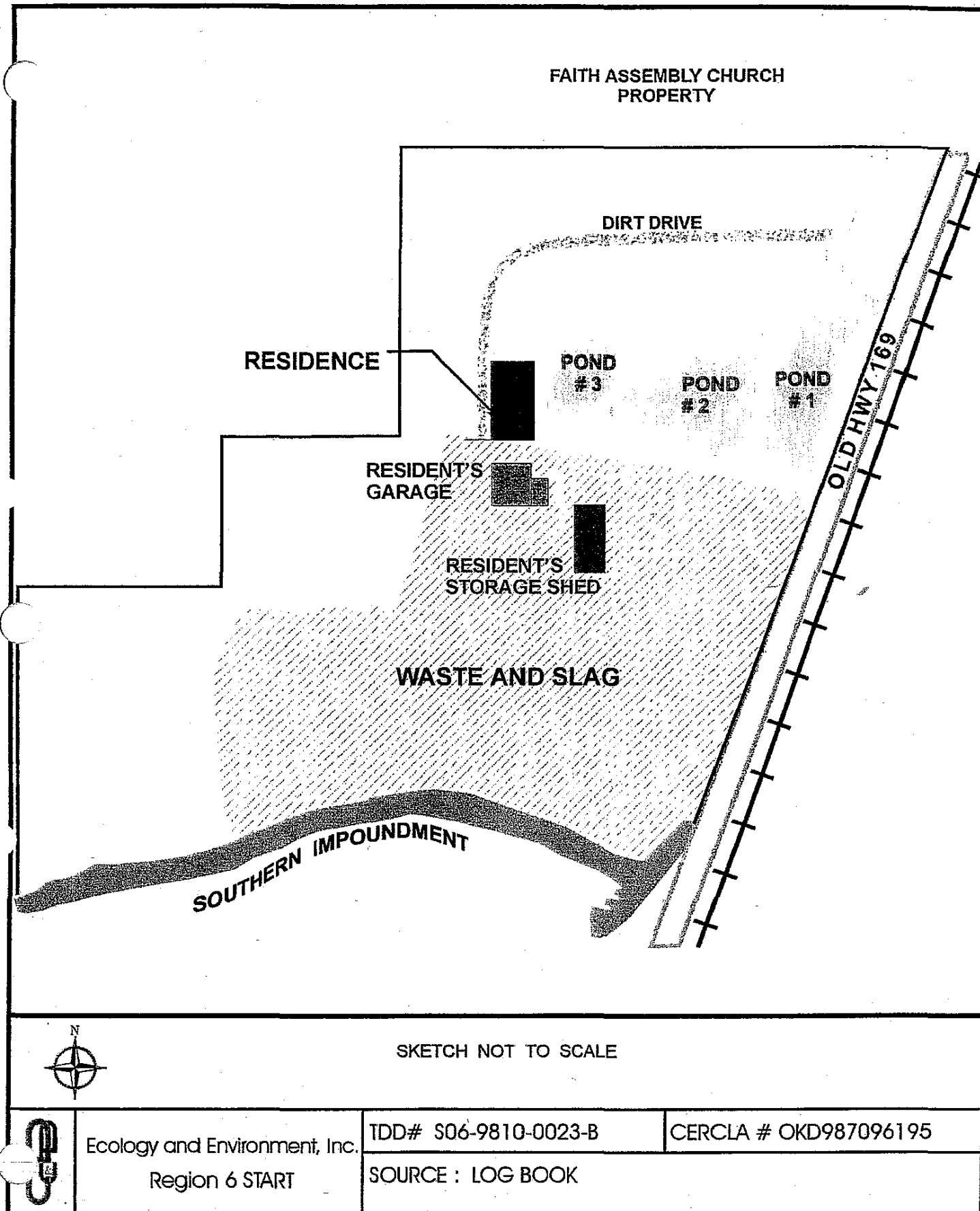
SUMMARY

The Tulsa Fuel and Manufacturing Company operated a zinc smelter and lead roaster from 1914 through 1925 on a 50-acre site just south of the city of Collinsville, Tulsa County, Oklahoma. The site was originally reported to the Environmental Protection Agency (EPA) as Acme Brick Strip Mines, and later corrected to the current name, Tulsa Fuel and Manufacturing (TFM) site. The majority of the facility structures have since been demolished and the site is currently covered with approximately 30,000 cubic yards of waste material from the smelter operation. A home also exists on-site near the former office building and has been occupied since 1935. The TFM site was listed on the National Priorities List in January 1999.

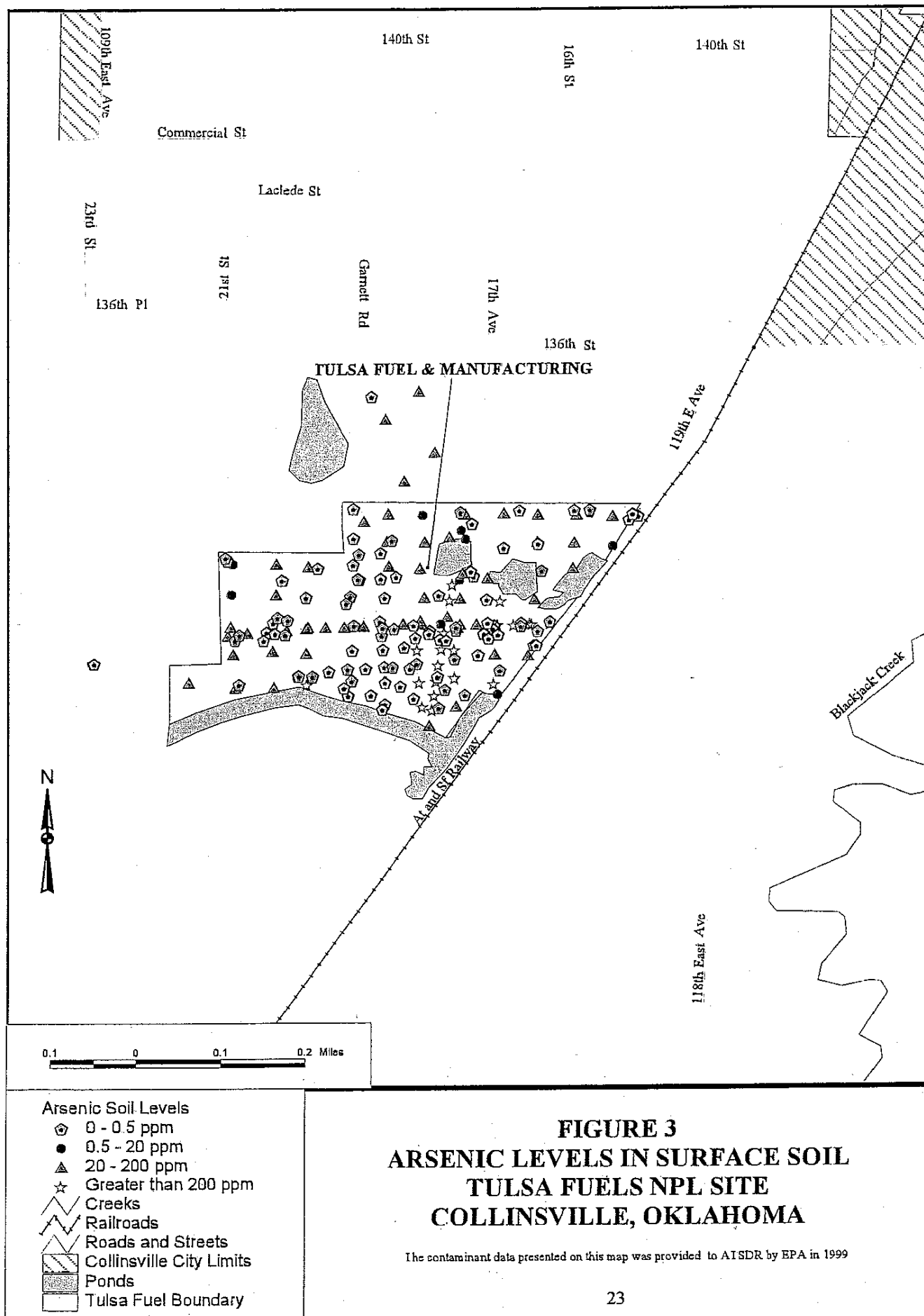
Sampling data of the on-site soil, sediment, and surface water show elevated levels of metal contaminants, including arsenic, cadmium, copper, lead, manganese, and zinc. Limited sampling data exist for on-site groundwater and off-site soil, sediment, and surface water.

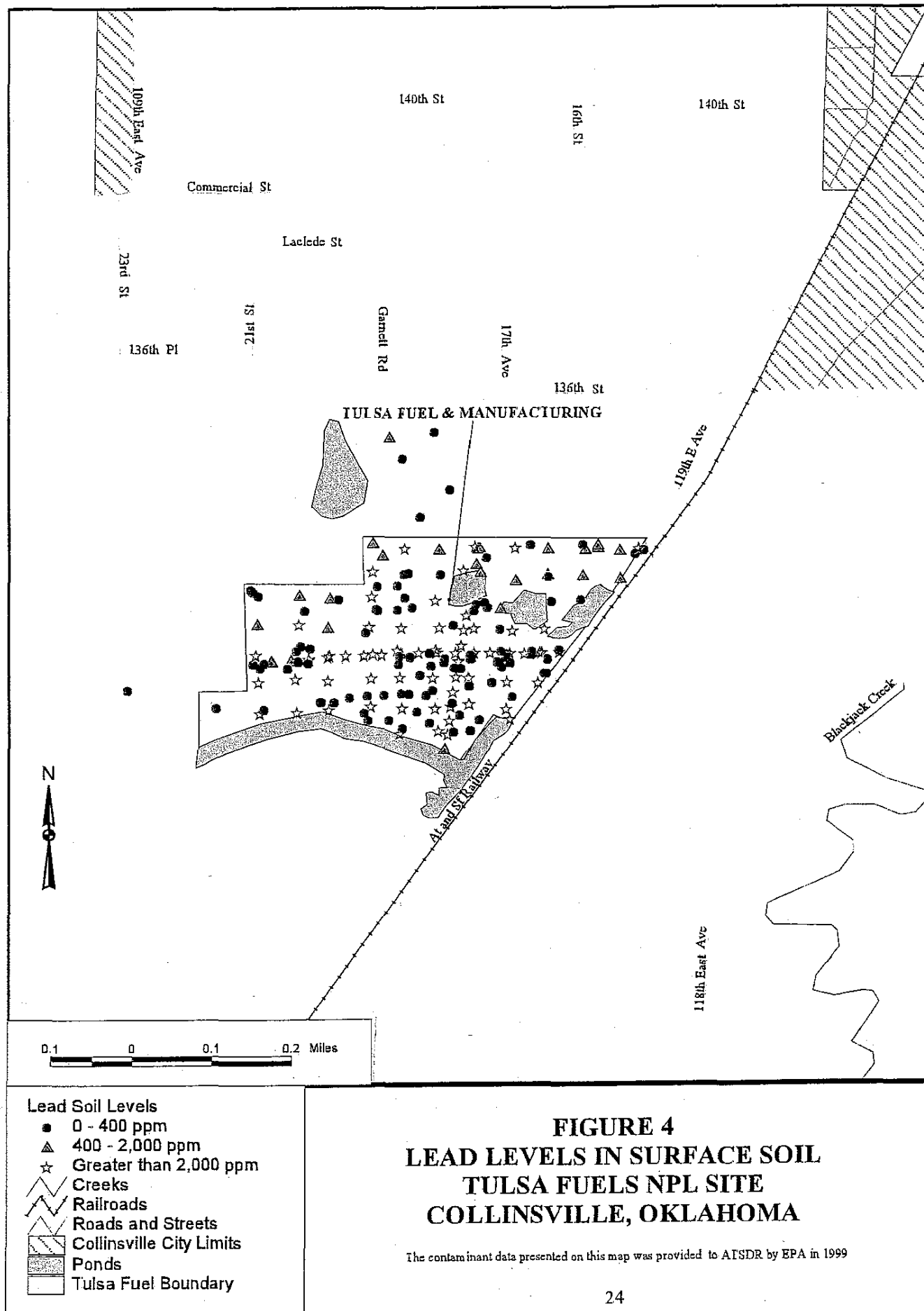
Exposure to the site contaminants are limited by the isolated, rural location of the site. Some recreational activity has occurred on the site, such as fishing, but it is assumed that the number of people fishing is small. The only access road to the site leads to the on-site residence, where one adult man lives.

Currently, the TFM site poses no apparent health hazard because of the limited exposure to on-site soils, sediment, and surface water. Frequent, long-term exposure to on-site soil would be a health concern. ATSDR is unable to evaluate the health implications of off-site contamination because of the limited data available. The U.S. Environmental Protection Agency (EPA) is planning to conduct a remedial investigation at this site in the near future.



Appendix A. Figure 2. Tulsa Fuel & Manufacturing site – site sketch from Removal Assessment Report (4).





Appendix B – Tables

Table B1. On-site Surface Soil Results, Tulsa Fuel & Manufacturing Site, Tulsa County, Oklahoma.

Contaminant	From Site Investigation, 9/94 ¹ n=7		From Removal Assess. Report, 5/99; XRF analysis ² n=106		From Removal Assess. Report, 5/99 TAL lab analysis ³ n=2		Comparison Value ⁴	
	Concentration Range (ppm)	Average (ppm)	Concentration Range (ppm)	Average (ppm)	Concentration Range (ppm)	Average (ppm)	Concentration (ppm)	Type
Arsenic	18.5 - 302	151	ND - 864	138	12.1 - 26.7	19.4	0.5 20	CREG EMEG-child
Cadmium	41.1 - 275	119	DNU	–	17.2 - 76.9	47.1	10	EMEG-child
Copper	126 - 1670	874	ND - 4023	659	87.3 - 122	105	2,000	estimated CV for child
Lead	1160 - 16,600	8539	138 - 36,565	4992	566 - 1560	1063	400	EPA SSL
Manganese	691 - 24,700J	10,610	ND - 45,655	5641	657 - 974	816	7,000	RMEG-child
Zinc	6770 - 37,000J	20,714	694 - 104,232	27,842	3030 - 11,500	7265	20,000	EMEG-child

¹ Includes five 0-2 inch samples from waste piles and two 0-3 inch samples from on-site residential yard.² Screening level analysis of 99 grid samples (0-6"), 5 road samples (0-2"), and 2 samples (0-6") from residential property.³ Two surface soil samples sent to laboratory for confirmation purposes, one from residential property and one grid sample from northern portion of site.⁴ The Comparison Values are defined on page 33.

n = number of samples

ppm = parts per million (or milligrams per kilogram)

ND = not detected

DNU = Data Not Usable because laboratory confirmation of this compound did not correlate well with XRF data.

J = estimated value

Table B2. On-site Subsurface Soil Results, from the Removal Assessment Report, 5/99. Tulsa Fuel & Manufacturing Site, Tulsa County, Oklahoma.

Contaminant	XRF analysis Slag samples from waste piles, 0-9 ft. n=37		XRF analysis Road samples, 2-24 inches n=6		TAL lab analysis ¹ n=6		Comparison Value ²	
	Concentration Range (ppm)	Average (ppm)	Concentration Range (ppm)	Average (ppm)	Concentration Range (ppm)	Average (ppm)	Concentration (ppm)	Type
Arsenic	ND - 1071	285	ND - 69	36	5.8 - 258	53.8	0.5	CREG
Cadmium	DNU	-	DNU	-	ND - 35.4	22.2	10	EMEG-child
Copper	ND - 2826	792	ND - 44	17	13 - 1130	225	2000	estimated CV for child
Lead	50 - 39,964	7604	3.4 - 986	350	14.4 - 91,800	15,722	400	EPA SSL
Manganese	323 - 56,320	18,382	216 - 1086	518	159 - 6540	1774	7000	RMEG-child
Zinc	396 - 79,511	30,841	139 - 7647	3465	42.7 - 25,200	5935	20,000	EMEG-child

¹ Five waste pile samples and 1 road sample were sent to the lab for confirmation purposes.

² The Comparison Values are defined on page 33.

n = number of samples

ppm = parts per million (or milligrams per kilogram)

ND = not detected

DNU = Data Not Usable because laboratory confirmation of this compound did not correlate well with XRF data.

Table B3. Off-site Surface Soil Results, Tulsa Fuel & Manufacturing Site, Tulsa County, Oklahoma.

Contaminant	From Site Investigation, 9/94 ¹ n=2		From Removal Assess. Report, 5/99; XRF analysis ² n=6		From Removal Assess. Report, 5/99 TAL lab analysis ³ n=1	Comparison Value ⁴	
	Concentration Range (ppm)	Average Concentration (ppm)	Concentration Range (ppm)	Average (ppm)	Concentration (ppm)	Concentration (ppm)	Type
Arsenic	10.4 - 13.7	12.1	ND - 48	33	5.56	0.5	CREG
Cadmium	4.2 - 6.2	5.2	DNU	—	0.85	0.4 10	EMEG-pica EMEG-child
Lead	226 - 362	294	ND - 700	166	14	400	EPA SSL
Manganese	521 - 548	535	205 - 893	490	323	300 7000	RMEG-pica RMEG-child
Zinc	892 - 786	839	360 - 3824	1094	311	600 20,000	EMEG-pica EMEG-child

¹ Two soil samples taken in residential yards, north of site on 136th St.

² The soil samples were taken within 800 ft. of the site, 5 from north of the site and 1 outside the southwest corner. They were labeled as background samples in the Removal Assessment Report.

³ One sample taken approximately 800 ft. north of the site.

⁴ The Comparison Values are defined on page 33.

n = number of samples

ppm = parts per million (or milligrams per kilogram)

ND = not detected

DNU = Data Not Usable because laboratory confirmation of this compound did not correlate well with XRF data.

Table B4. On-site Sediment Sample Results, Tulsa Fuel & Manufacturing Site, Tulsa County, Oklahoma.

Contaminant	Site Investigation, 9/94 n=4		Removal Assess. Report, 5/99 TAL lab analysis, n=29		Comparison Value ¹	
	Concentration Range (ppm)	Average Concentration (ppm)	Concentration Range (ppm)	Average Concentration (ppm)	Concentration (ppm)	Type
Antimony	ND - 50.9	18	ND - 20J	6.1	20	RMEG-child
Arsenic	7.8 - 514	157	ND - 110	14	0.5	CREG
Cadmium	13.9 - 1833	498	1.5 - 189	33	10	EMEG-child
Lead	160 - 25,400	8192	12 - 395J	129	400	EPA SSL
Manganese	741 - 6946	3894	35 - 2280J	856	7000	RMEG-child
Zinc	1590 - 22,900	12,780	101 - 4800	1300	20,000	EMEG-child

¹ The Comparison Values are defined on page 33.

n = number of samples

ppm = parts per million (or milligrams per kilogram)

ND = not detected

J = Estimated Value

Table B5. Surface Water Sample Results, Tulsa Fuel & Manufacturing Site, Tulsa County, Oklahoma.

Contaminant	Site Investigation, 9/94 n=4		Removal Assess. Report, 5/99 n=12		Surface Water Comparison Values ¹	
	Concentration Range (ppb)	Average Concentration (ppb)	Concentration Range (ppb)	Average Concentration (ppb)	Concentration (ppb)	Type
Arsenic	ND - 3.2 J	1.6	ND - 51	14	2.0 5000	CREG ² MCL ²
Cadmium	5 - 58.3	36	ND - 30	9.3	200 500	EMEG-child ² MCL ²
Lead	ND - 31.8	17	ND - 18	6.0	1500	EPA Action Level ²
Manganese	ND - 300	107	45 - 289	210	5000	RMEG-child ²

¹ Comparison Values are defined on page 33.

² Comparison Values for drinking water were multiplied by 100, because it was assumed that daily ingestion of surface water for a child was 10 ml rather than the 1000 ml used for drinking tap water.

n = number of samples

ppb = parts per billion (or micrograms per liter)

ND = not detected

J = Estimated Value

APPENDIX A-4

**Collinsville Strip Mine Investigation
FDI, 1997**

U.S. EPA

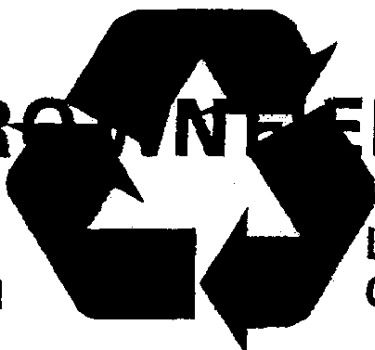
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WASTE MANAGEMENT
DIVISION

BROWN FIELDS

Fluor
Daniel



Local
Governments

FINAL REPORT

**COLLINSVILLE STRIP MINE SITE
COLLINSVILLE, OKLAHOMA**

WORK ASSIGNMENT NO. 52-6JZZ

JANUARY 21, 1997

PREPARED FOR

**U.S. ENVIRONMENTAL PROTECTION AGENCY
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733**

**FLUOR DANIEL
ENVIRONMENTAL SERVICES, INC.
SUBMITTED BY:**


**MENGISTU LEMMA
ARCS PROJECT MANAGER**

**FLUOR DANIEL
ENVIRONMENTAL SERVICES, INC.
APPROVED BY:**


**STEVE DICKSON
ARCS DEP. PROGRAM MANAGER**

08 001

Executive Summary

The Collinsville Strip Mine Site is a former surface-mined area located at 724 N. 5th Street in the City of Collinsville, Tulsa County, Oklahoma. Currently, the site is an underdeveloped parcel of land owned by the City of Collinsville. The city does not have a finalized plan for the future use of the land. They are considering several options including use as a park.

The entire Collinsville Strip Mine Site involves two adjacent properties. However, this investigation focused on the south property. The south property is approximately 20 acres and is located immediately next to a residential area. The site had once contained a pit that was used by local children for swimming and fishing. The pit had dangerous high walls and due to the preponderance of children fishing and swimming, it was considered to be a public safety hazard.

In August of 1995, the Oklahoma Conservation Commission (OCC) proposed to correct the public safety hazard using funds from the Office of Surface Mining. Upon approval of the proposal, the pit was filled to grade, the disturbed area was graded and shaped to conform with adjacent topography, and grass was planted at the site.

It was reported that two zinc smelters operated within one mile of the site in the early 1900s. Waste from these sites has reportedly been used as fill material in the area. The possible use of these wastes and deposition of airborne heavy metals defined the scope of this investigation to focus on metals.

On June 13, 1996 Fluor Daniel Inc. (FDI) conducted an on-site reconnaissance. FDI personnel walked the site and identified the backfilled pit. As part of the reclamation action, a storm water management plan to control erosion and sedimentation was developed by the OCC. A large drainage ditch runs from the backfilled pit across the southern portion of the site.

On July 29, 1996 FDI conducted a sampling inspection at the site. Ten surface soil samples were collected and analyzed for metals. The analytical results indicate no problem in most of the samples. However, one analyte (cadmium) was detected in one sample (SS-06), and another analyte (selenium) was detected in two samples (SS-06 and SS-09).

January 21, 1997

FDI recommends to resample the original test areas SS-06 and SS-09. If there is a localized problem, the extent of the contamination should be delineated for the next level of remedial activity. If the results prove to be anomalous, no further action is recommended.

Table 1- Sampling Data summary

Sample #	Date/Time Collected	Analysis	Location	Comments
SS-01	6-29-96/ 1248	TAL Metals	SW corner	Native soil, brown sandy clay.
SS-02	6-29-96/ 1254	TAL Metals	100 ft. from south and 100 ft. from west fences.	Native soil, brownish sandy clay.
SS-03	6-29-96/ 1254	TAL Metals	duplicate of SS-02	duplicate of SS-02
SS-04	6-29-96/ 1304	TAL Metals	500 ft. from north and 50 ft. from west property lines.	Brownish red sandy clay.
SS-05	6-29-96/ 1317	TAL Metals	150 ft. from west and 300 ft. from north lines.	Wet and loose sandy clay.
SS-06	6-29-96/ 1323	TAL Metals	50 ft. from west and 50 ft. from north property lines.	Dark clayish with lots of pebbles.
SS-07	6-29-96/ 1242	TAL Metals	Near south fence mid-way between east-west.	Silty sand.
SS-08	6-29-96/ 1312	TAL Metals	150 ft. from east and 300 ft. from north property lines.	Reddish brown silty sand
SS-09	6-29-96/ 1230	TAL Metals	Outfall of drainage ditch.	Wet silty clay with lots of pebbles.
SS-10	6-29-96/ 1324	TAL Metals	Near the main entrance.	Fine sand.
SS-11(background)	6-29-96/ 1341	TAL Metals	NE, off property.	Sandy clay.

Table 2 - Analytical Data Summary

Analyte	SS-01 ppm	SS-02 ppm	SS-03 ppm	SS-04 ppm	SS-05 ppm	BKGD* (SS-11) ppm
Aluminum	42,600	42,200	46,300	48,900	53,400	38,200
Antimony	ND	ND	ND	ND	ND	ND
Arsenic	21	14	14	21	9 6	17
Barium	205	183	218	198	137	249
Beryllium	ND	ND	ND	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND
Calcium	8,730	6,660	6,010	8,180	7,280	12,800
Chromium	57	46	56	64	38	55
Cobalt	ND	ND	ND	ND	ND	63
Copper	41	30	34	36	32	33
Iron	33,800	36,500	39,800	43,100	42,400	38,200
Lead	28	27	32	29	20	53
Magnesium	5,120	4,280	5,570	9,190	8,530	6,750
Manganese	619	525	626	693	609	564
Nickel	40	39	43	55	50	55
Potassium	8,020	5,330	10,100	12,000	11,800	7,380
Selenium	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND
Sodium	ND	ND	ND	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND
Vanadium	73	57	77	85	37	74
Zinc	145	117	138	176	161	187

* Background

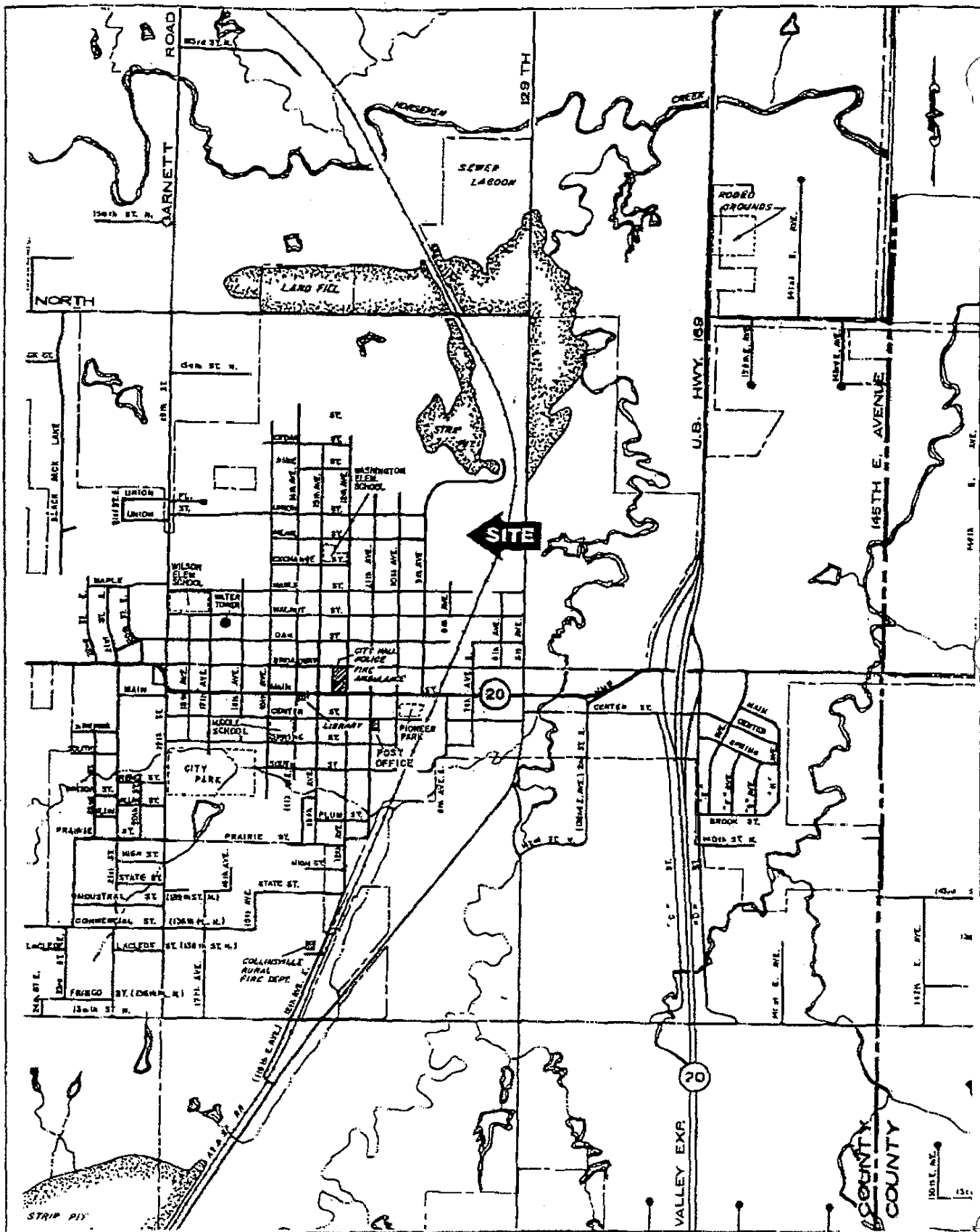
Table 2- Analytical Data Summary (Contd.)

Analyte	SS-06 ppm	SS-07 ppm	SS-08 ppm	SS-09 ppm	SS-10 ppm	BKGD* (SS-11) ppm
Aluminum	41,400	45,5300	45,700	45,500	21,700	38,200
Antimony	ND	ND	ND	ND	ND	ND
Arsenic	35	12	9	35	8.9	17
Barium	241	119	136	75.3	91	249
Beryllium	ND	ND	ND	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND
Calcium	6,160	5,350	22,800	3,800	8,270	12,800
Chromium	162	37	44	72	51	55
Cobalt	ND	ND	ND	ND	ND	63
Copper	43	30	31	42	18	33
Iron	39,400	39,200	39,300	39,600	19,300	38,200
Lead	60	30	28	52	28	53
Magnesium	6,900	5,420	8,690	5,700	3,100	6,750
Manganese	391	559	766	775	2,940	564
Nickel	100	41	48	68	32	55
Potassium	10,400	5,620	6,960	8,250	5,070	7,380
Selenium	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND
Sodium	ND	ND	ND	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND
Vanadium	228	52	56	88	66	74
Zinc	287	125	142	183	173	187

Shading indicates results above background.

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FLUOR DANIEL

FIGURE 2

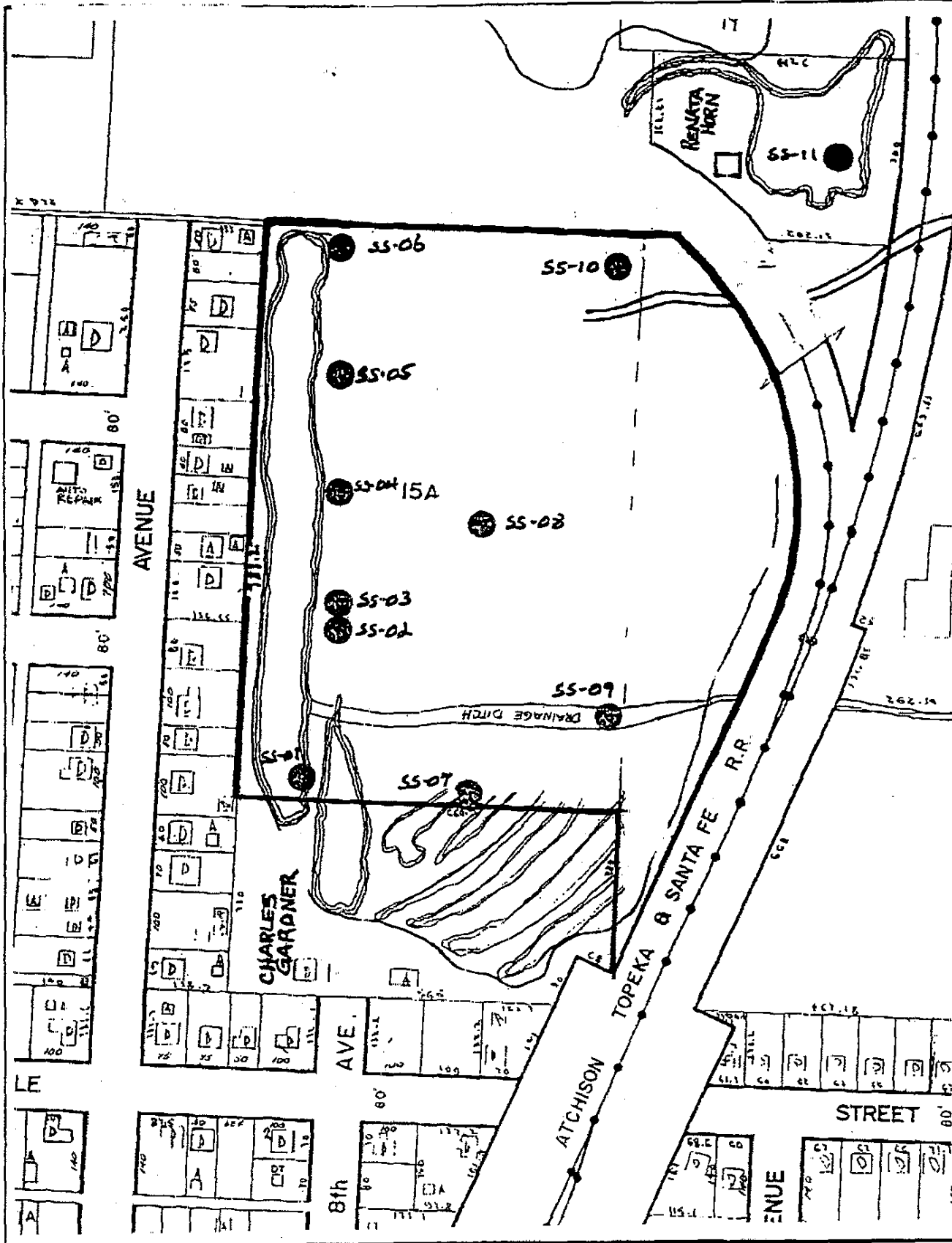
SITE AREA MAP
COLLINSVILLE STRIP MINE SITE
COLLINSVILLE, OKLAHOMA
EPA ID #BOK000000001

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● SAMPLING LOCATION



FIGURE 3

SAMPLING LOCATION SKETCH
COLLINSVILLE STRIP MINE SITE
COLLINSVILLE, OKLAHOMA
EPA ID #BOK000000001

08 020

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FILE NO.:

REV.

APPENDIX A-5

**Collinsville Smelter Focused Remedial Investigation
Exponent, 2001**



Focused Remedial Investigation

Collinsville Smelter Site

Prepared for

Phelps Dodge Corporation
1501 W. Fountainhead Parkway
Tempe, Arizona 85282-1846

Prepared by

Exponent
15375 SE 30th Place, Suite 250
Bellevue, Washington 98007

January 2001

Table 4-1. Summary of surface soil and residue data from previous site sampling

Sample Area	No. of Sample Locations	Concentration			
		Arsenic	Cadmium	Lead	Zinc
Residue area (SS-1) (onsite)	1	1,080 <i>J</i> (412)	74 (39.5)	12,400 (5,230)	28,400 <i>J</i> (22,900)
Surface soil (onsite/near site)	10	39.8–301 (28.3–190)	1.1–437 (4.9–67.4)	357–12,700 (567–3,190)	1,240 <i>J</i> –56,800 <i>J</i> (1,930–14,700)
Surface soil (offsite/background)	2	4.2–19.8 (5.6 <i>U</i> –25.3)	0.77–4.1 (0.79–5.9)	54–258 (39.4–379)	169 <i>J</i> –788 <i>J</i> (169–1,280)

Note: Results reported as mg/kg based on sample dry weight.

Data presented are from grab samples collected by ODEQ (1995a). Data in parentheses are ranges for composite samples collected at the same locations by Mintech on behalf of Cyprus Amax (as presented in Appendix D of PTI [1996a]).

J - result is estimated because of outlying quality control parameters
U - undetected at detection limit shown

Table 4-7. Statistical summary of concentration data for offsite soil results

	Number of Samples	Minimum	Maximum	Arithmetic Mean	Standard Deviation	Median	Geometric Mean
Offsite Surface Soil Samples							
Arsenic	8	0.24	93.5	20.3	30.7	9.9	5.8
Cadmium	8	0.7	21.8	4.7	7.2	1.7	2.4
Lead	50	36.6	7,090	437	1,020	165	193
Zinc	8	78.7	3,690	706	1,230	222	316
Residential and Targeted Location Soil Samples							
Arsenic	14	1.4	21.6	9.9	7.6	6.4	6.9
Cadmium	14	0.54	4.9	2.5	1.5	2.8	2.0
Lead	14	8.7	257	107	85.6	103	66.7
Zinc	14	28.8	845	324	268	286	204

Note: Results reported as mg/kg. Sample depth was 0–3 in.

Table 4-8. Statistical summary of concentration data for background sediment results

	Number of Samples	Minimum	Maximum	Arithmetic Mean	Standard Deviation	Median	Geometric Mean
Arsenic	9	2.2	22.4	8.3	6.4	7.2	6.4
Cadmium	9	0.15	3.7	1.8	1.3	1.2	1.2
Lead	9	13.6	78.8	34.3	20.8	30.2	29.5
Zinc	9	52	283	119	69.9	103	105

Note: Results reported as mg/kg.

Background sediment stations were RI Stations SD01, SD02, SD03, and SD17,
ODEQ Stations SD-2, SD-6, and T-SD-7, and Mintech Station SD-6.

Table 4-9. Statistical summary of concentration data for sediment results

	Number of Samples	Minimum	Maximum	Arithmetic Mean	Standard Deviation	Median	Geometric Mean
Upstream stations^a							
Arsenic	9	7.8	514	84.8	163	23.1	32.7
Cadmium	9	0.5	1,880	230	602	22.4	26.2
Lead	9	52	25,400	3,730	8,370	180	434
Zinc	9	514	22,900	6,820	8,700	3,770	3,070
Near downstream stations^b							
Arsenic	11	1.4	46.6	17.7	16.9	8.8	9.9
Cadmium	11	2.2	31.4	12.1	12.4	5.4	7.3
Lead	11	15	530	214	170	228	137
Zinc	11	105	6,830	1,600	2,130	583	796
Far downstream stations^c							
Arsenic	5	2.8	13.5	7.9	4.5	6.2	6.8
Cadmium	5	0.15	0.6	0.38	0.21	0.5	0.33
Lead	5	6.0	37.5	17.2	11.9	14.6	14.5
Zinc	5	35.6	94.5	53.1	23.8	45.0	49.8
RI Station SD09^d							
Arsenic	1	169	169	NA	NA	NA	NA
Cadmium	1	7.1	7.1	NA	NA	NA	NA
Lead	1	805	805	NA	NA	NA	NA
Zinc	1	10,800	10,800	NA	NA	NA	NA

Note: Results reported as mg/kg.

NA - not applicable

^a Upstream station locations were RI Stations SD04, SD05, SD15, and SD16 and ODEQ Stations T-SD-1 through T-SD-4 and T-SD-6.

^b Near downstream station locations were RI Stations SD06–SD08 and SD10–SD14, Mintech Station SD-5, and ODEQ Stations SD-5 and T-SD-5.

^c Far downstream station locations were Mintech Station SD-4 and ODEQ Stations SD-1, SD-4, T-SD-8, and T-SD-10.

^d One sample was collected from RI Station SD09 as a background sample, but elevated metals concentrations appear to be present as a result of the observed retort placed at this location to support road construction.

Table 4-10. Summary of surface water data from previous investigations

Sample Area	No. of Sample Locations	Concentration			
		Total Arsenic	Total Cadmium	Total Lead	Total Zinc
Upstream ^a	5	0.002 <i>U</i>	0.004 <i>U</i> –0.058	0.005 <i>UC</i> –0.024	0.03–2.5
Downstream ^b	8	0.002 <i>U</i> –0.01 <i>U</i>	0.001 <i>U</i> –0.01 <i>U</i>	0.002 <i>U</i> –0.0055	0.0035 <i>LUC</i> –0.11
Background ^c	5	0.002 <i>U</i> –0.01 <i>U</i>	0.001 <i>U</i> –0.012 <i>L</i>	0.0049 <i>U</i> –0.0091 <i>UC</i>	0.0082 <i>LUC</i> –0.24

Note: Results reported as mg/L.

Data presented are from ODEQ (1994a, 1995a) and Mintech (as presented in PTI [1996a]).

L - reported concentration is between the instrument detection limit and the contract-required detection limit

U - undetected at detection limit shown

UC - reported concentration should be used as a raised detection limit because of apparent blank contamination

^a Upstream stations were ODEQ Stations T-SW-1 through T-SW-4 and T-SW-6.

^b Downstream stations were Mintech Stations SW-4 and SW-5, ODEQ Stations SW-1, SW-4, SW-5, T-SW-5, T-SW-8, and T-SW-10.

^c Background stations were Mintech Station SW-6 and ODEQ Stations SW-2, SW-6, T-SW-7, and T-SW-9.

Table 4-11. Summary of air monitoring results

	August Sampling Event		September Sampling Event	
	Downwind	Upwind	Downwind	Upwind
	(mg)	(mg)	(mg)	(mg)
Arsenic	0.009	0.009	0.006	0.004
Cadmium	0.003	0.003	0.002	0.003
Lead	0.063	0.061	0.039	0.019
Zinc	0.30	0.31	0.11	0.08

Note: Results reported as total mass in mg collected on the air sampling filter during each sampling event.

Table 4-12. Summary of estimated air concentrations

	August Sampling Event		September Sampling Event	
	Downwind	Upwind	Downwind	Upwind
Arsenic	0.00093	0.00084	0.00080	0.00060
Cadmium	0.00031	0.00028	0.00045	0.00045
Lead	0.063	0.058	0.052	0.028
Zinc	0.032	0.028	0.015	0.012

Note: Concentrations reported in $\mu\text{g}/\text{m}^3$.

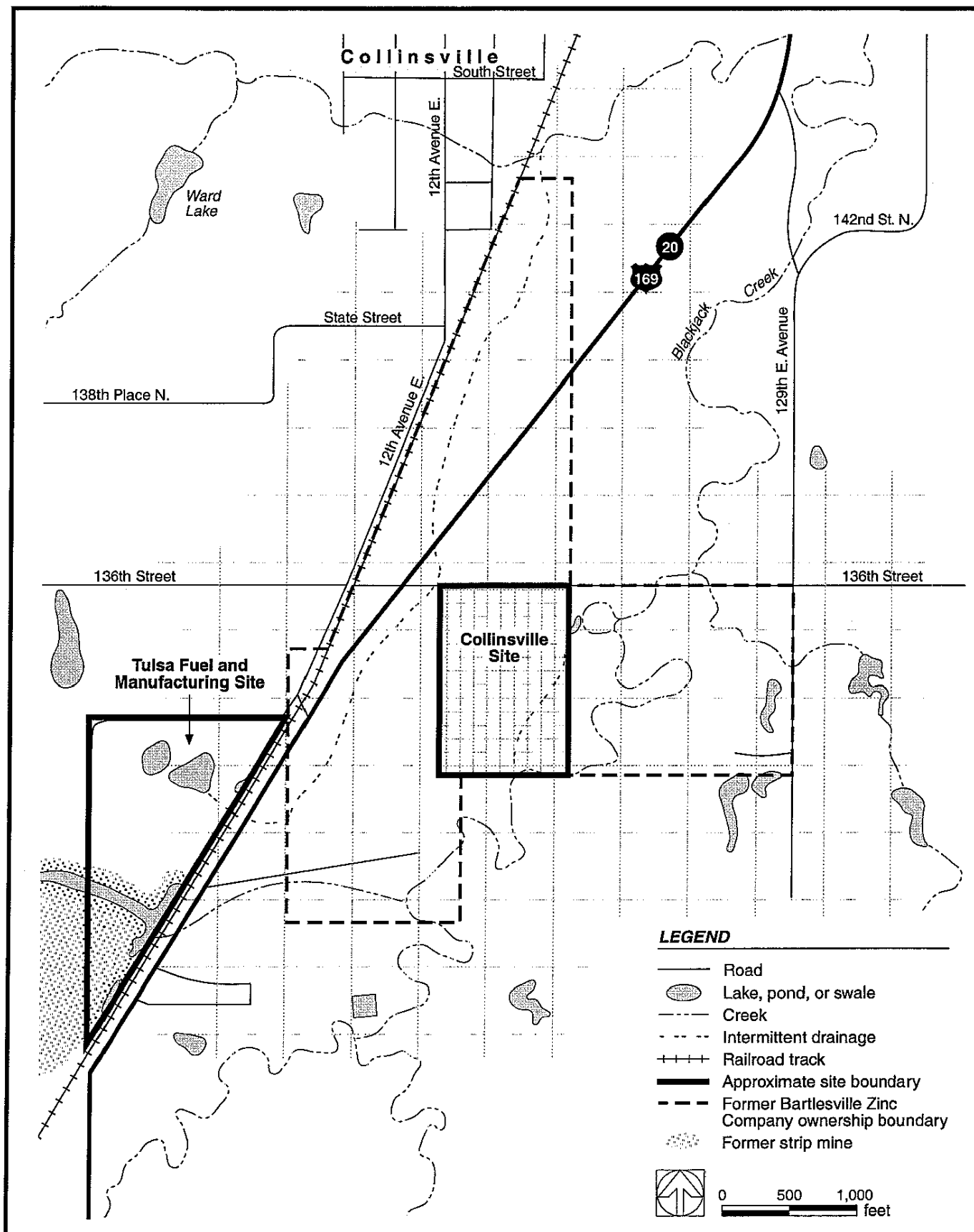


Figure 1-2. Site map – Collinsville, Oklahoma.

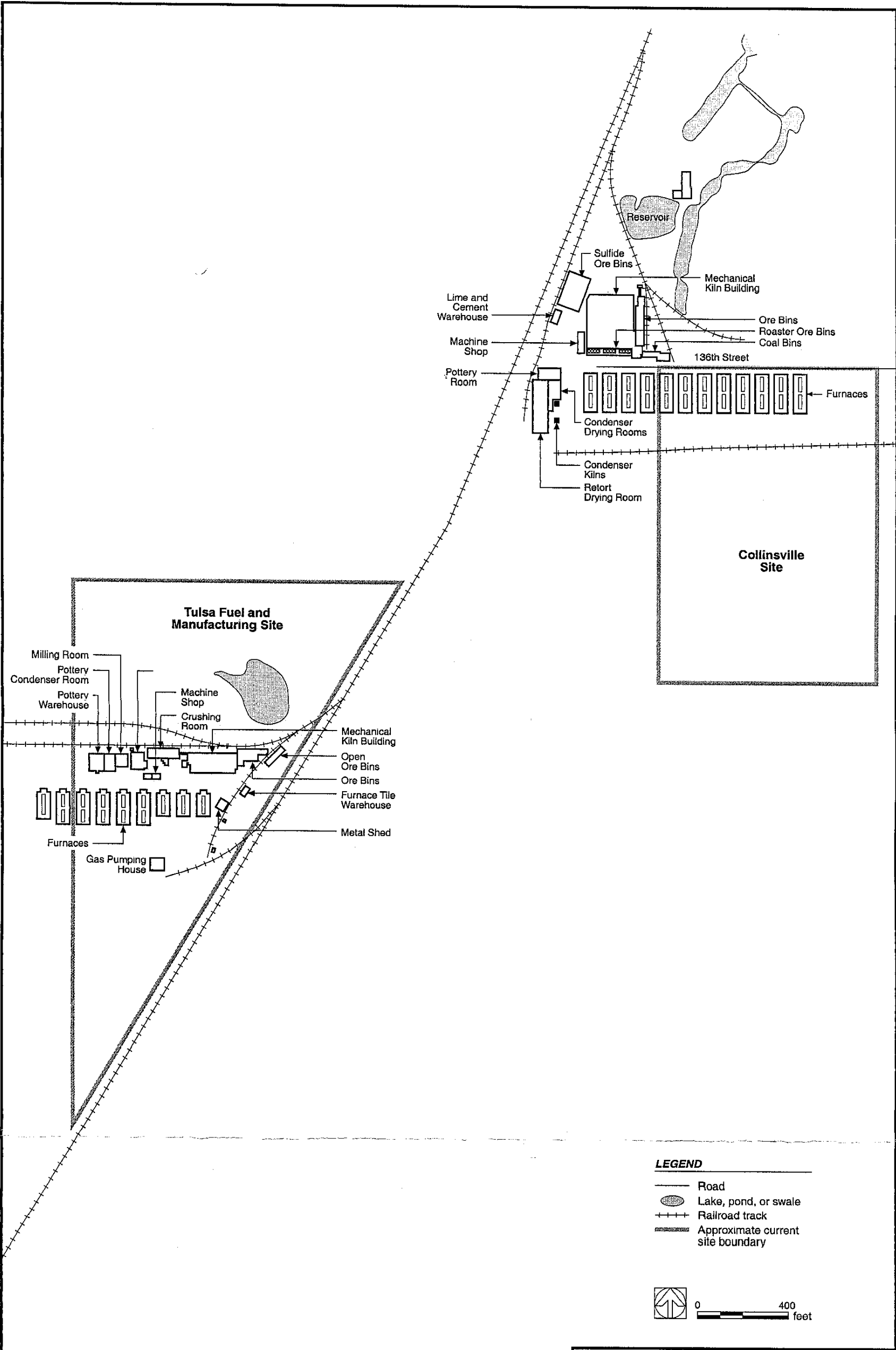
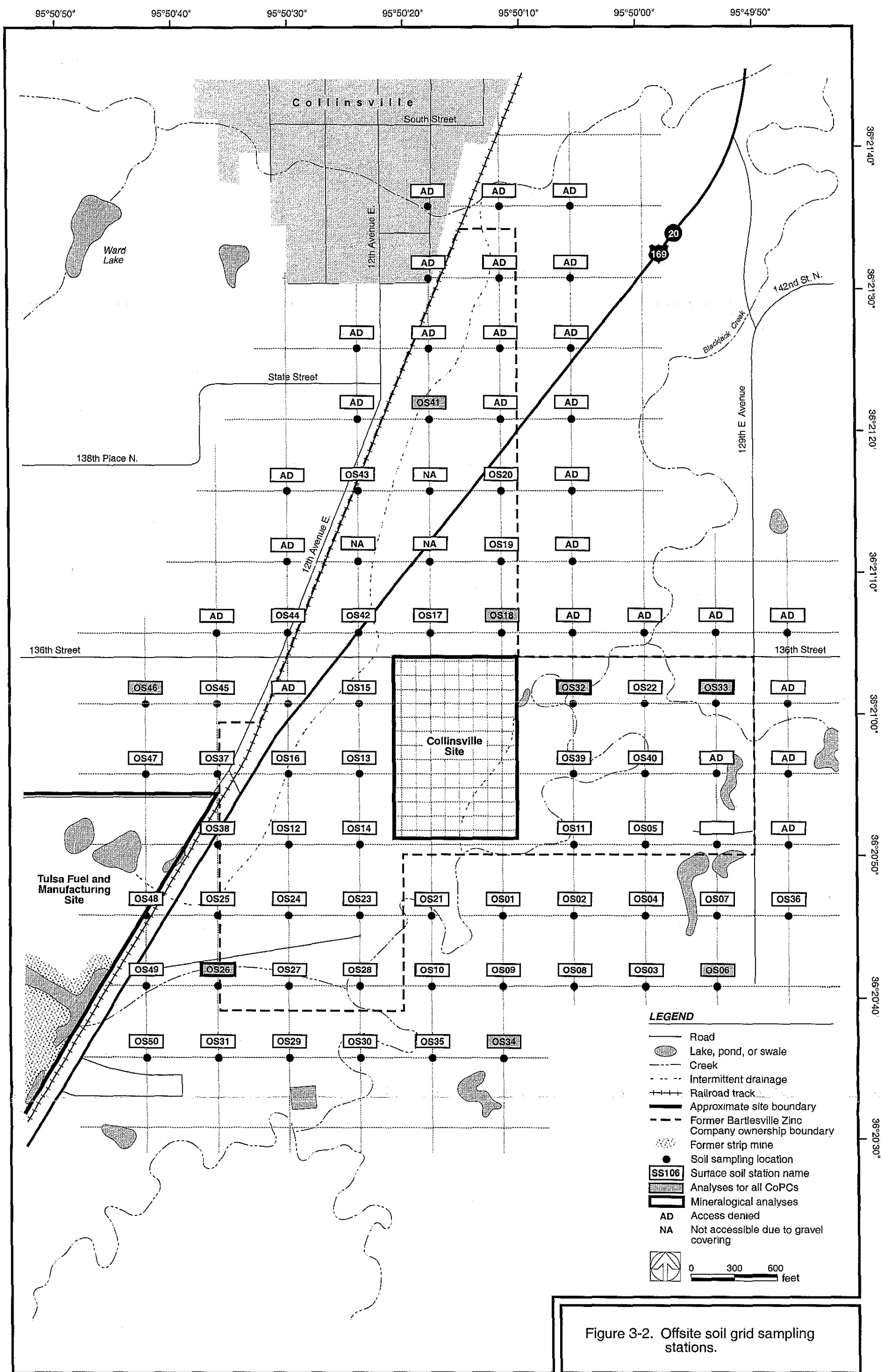
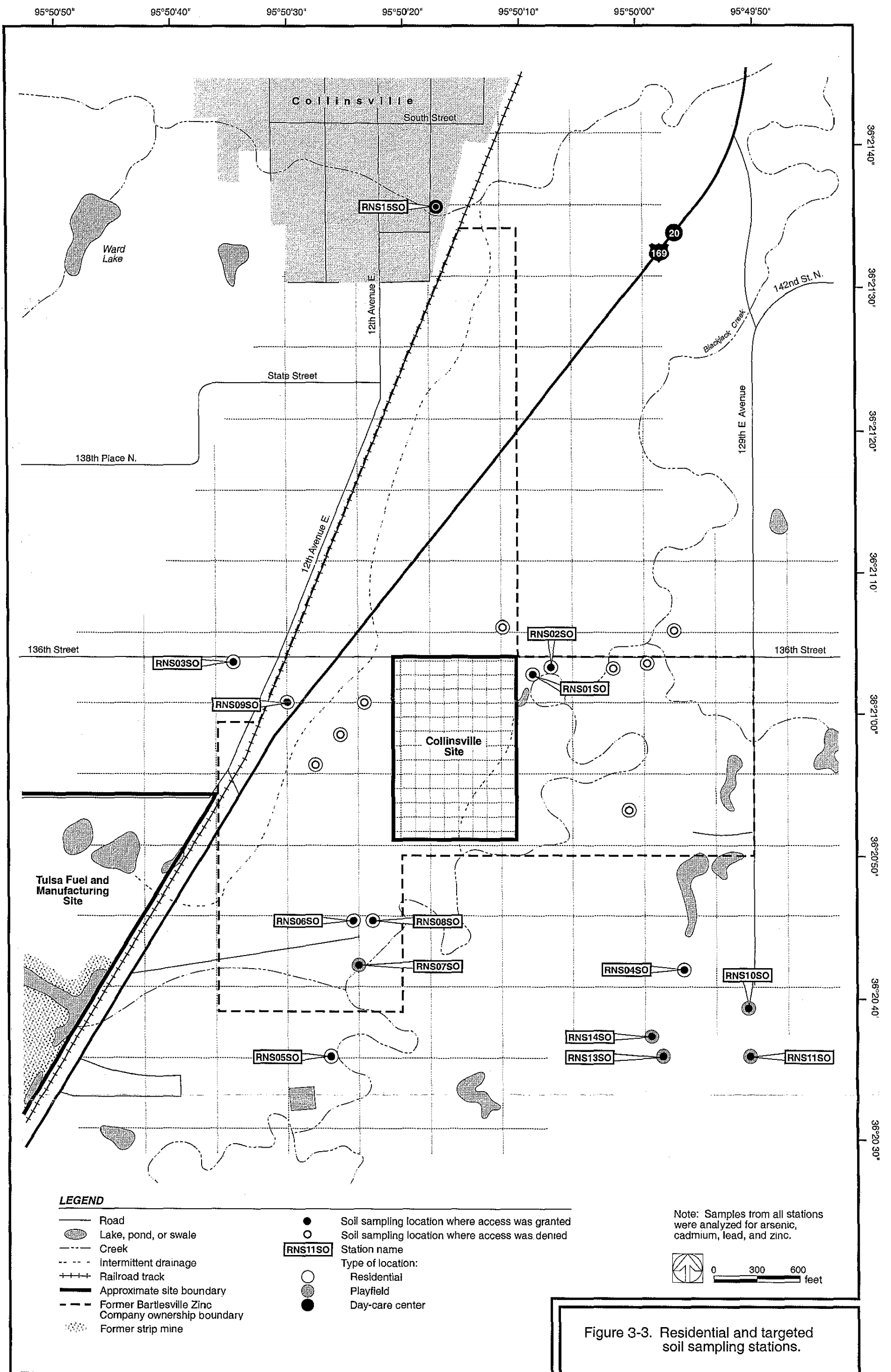


Figure 1-3. Historical features for the Collinsville and Tulsa Fuel and Manufacturing sites.



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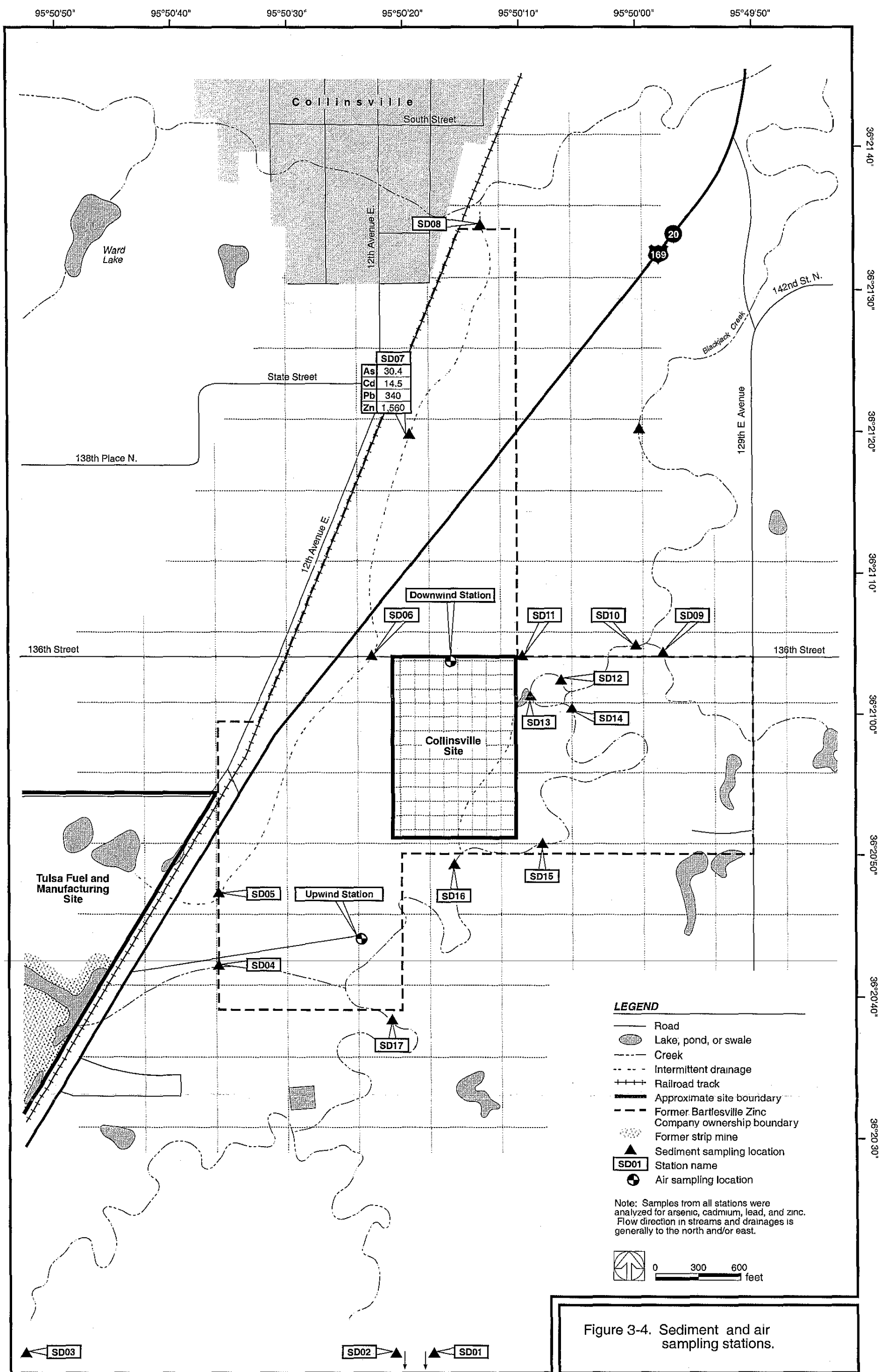


Figure 3-4. Sediment and air sampling stations.

8600A79.001 0305 12/03/99 WA

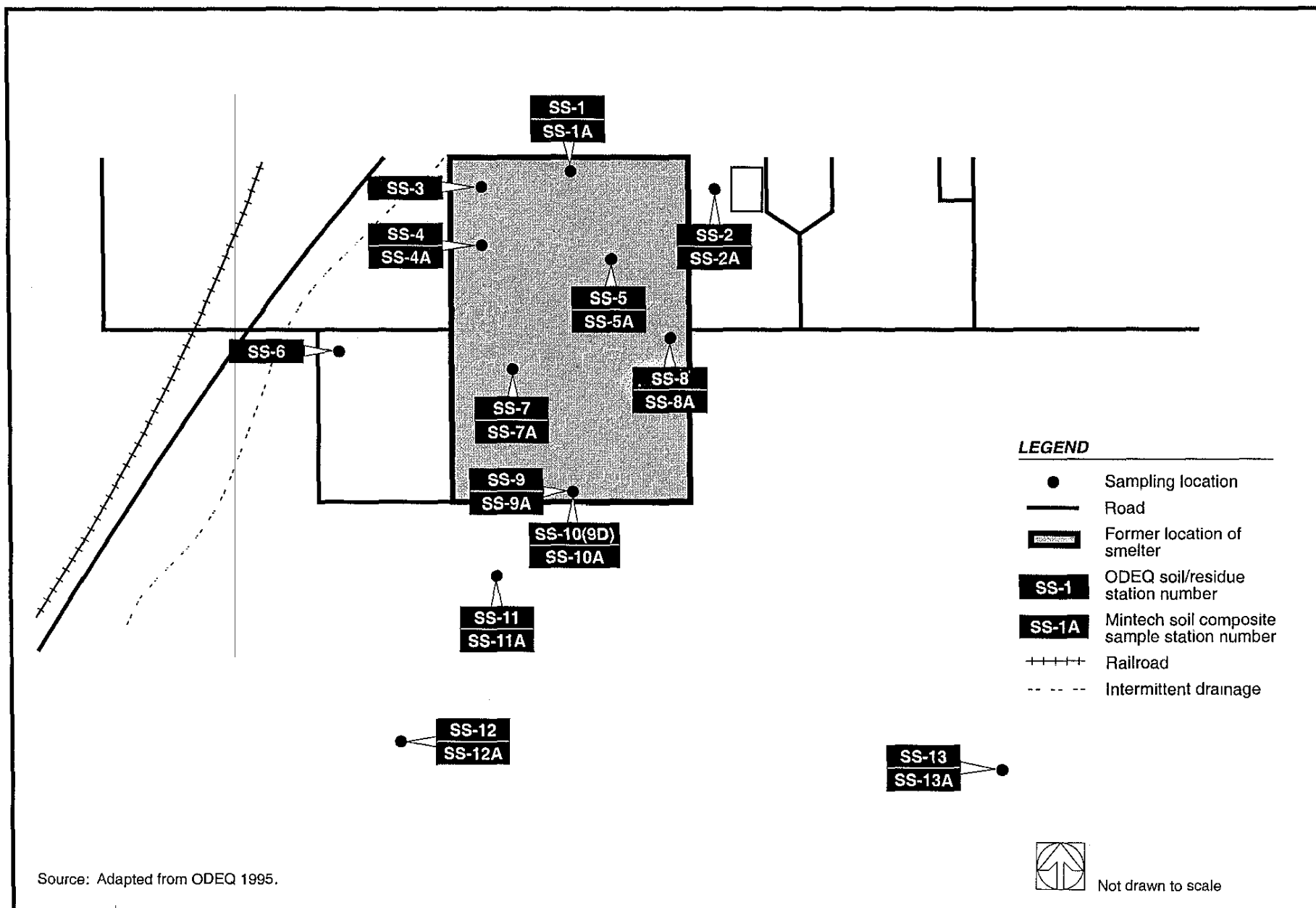


Figure 4-1. Locations of previous soil sampling stations.

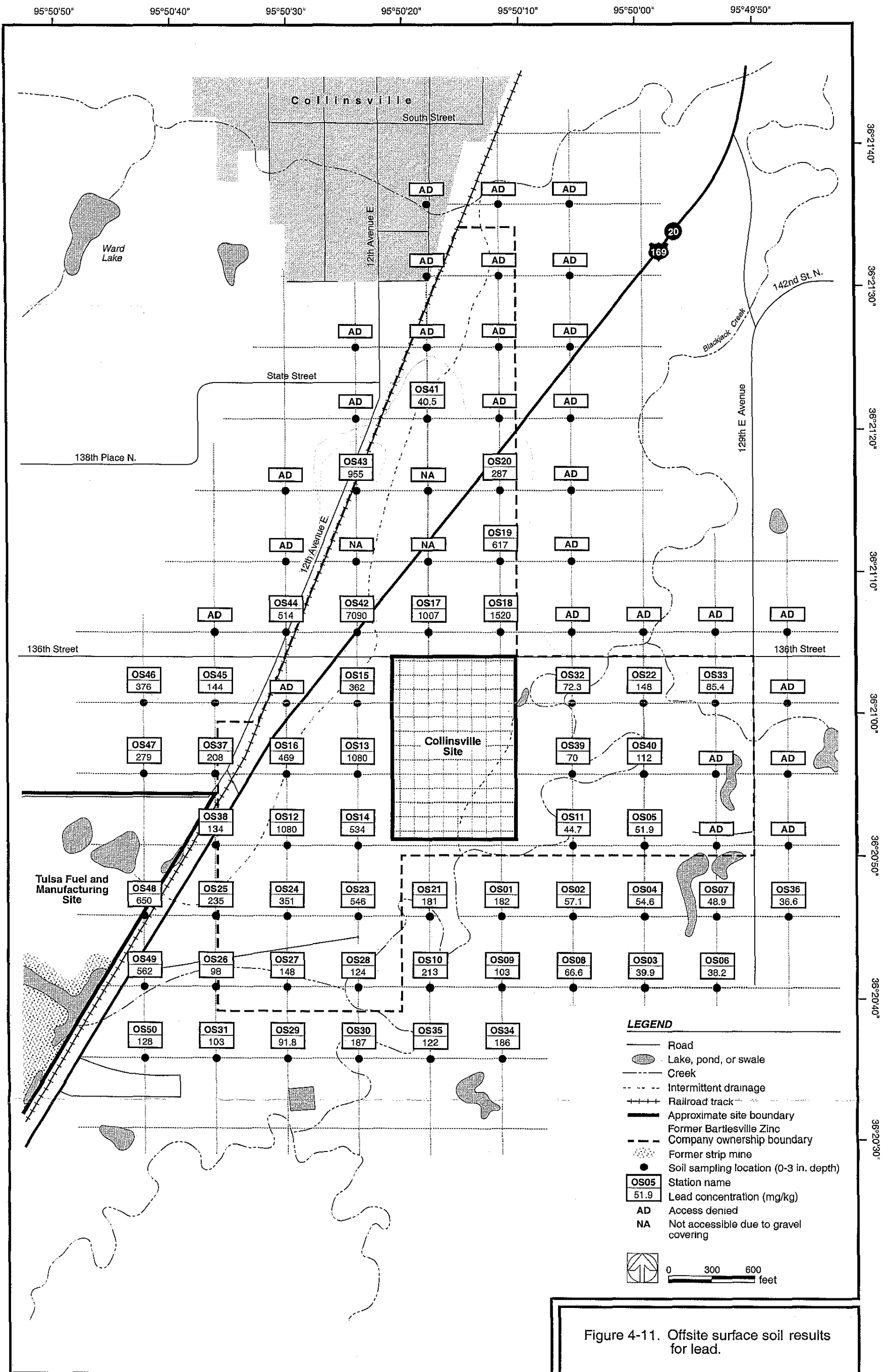
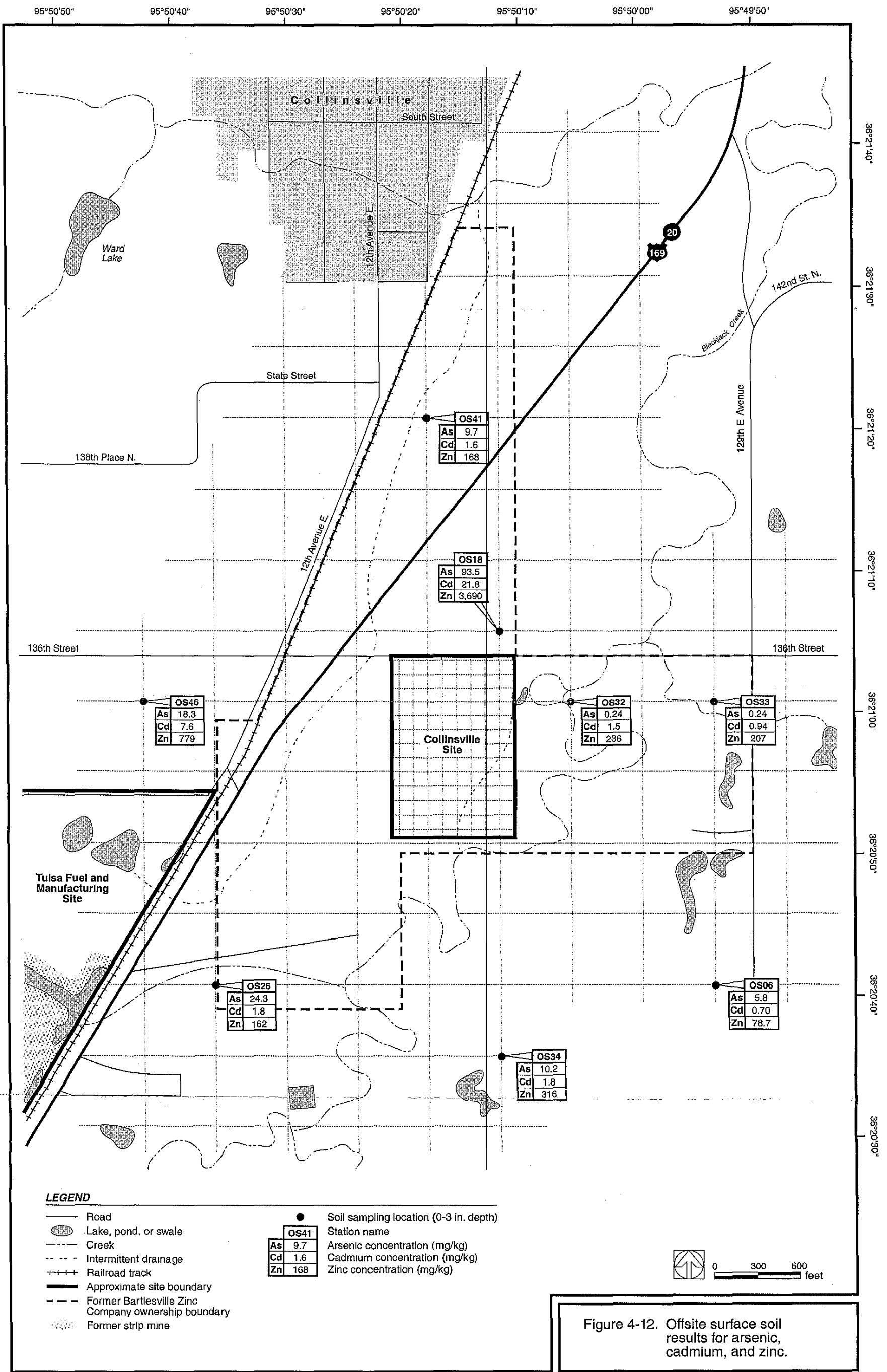


Figure 4-11. Offsite surface soil results for lead.

8600A79.001 0305 12/03/99 WA



8600A79.001 0305 12/03/99 WA

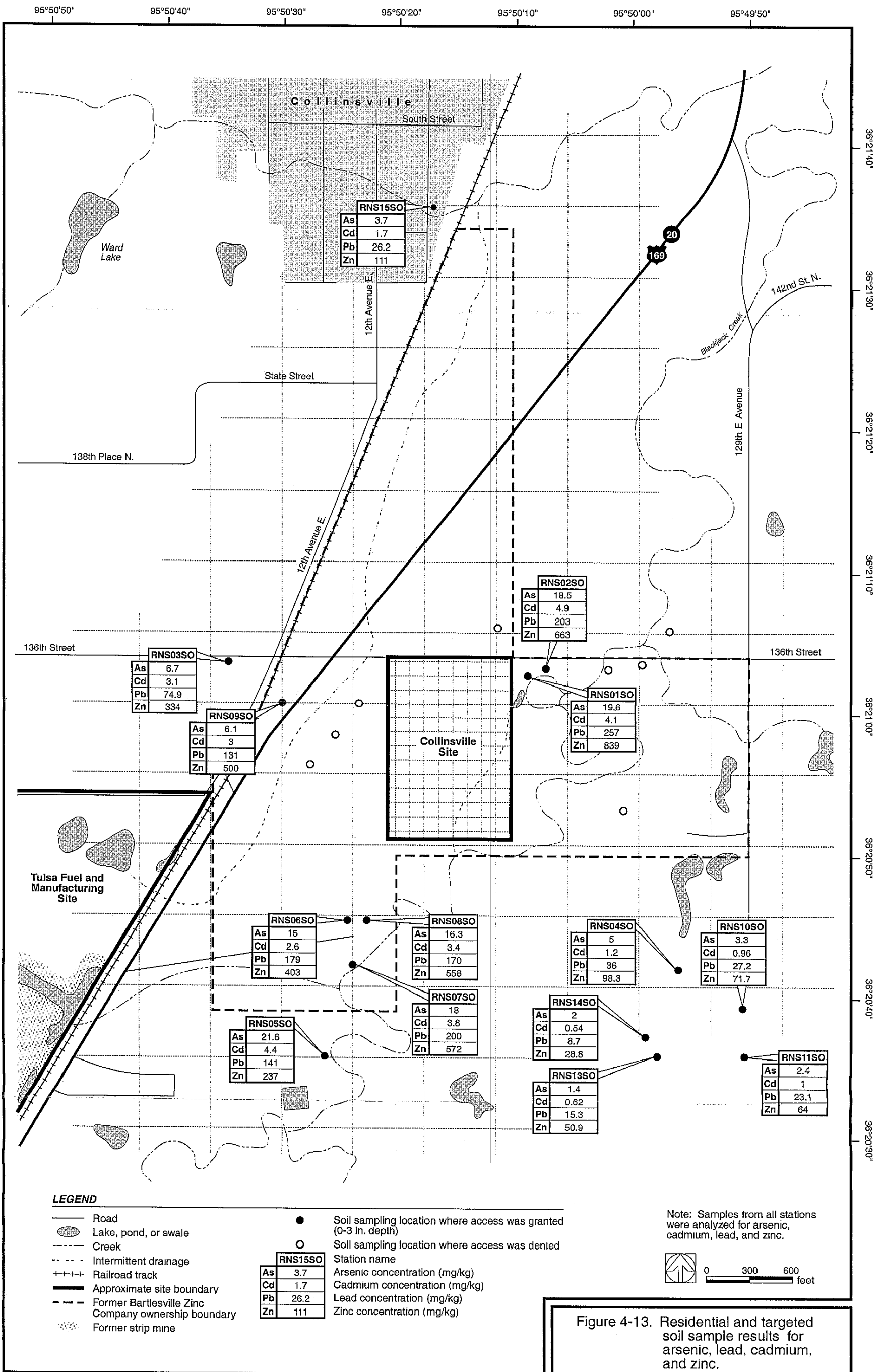


Figure 4-13. Residential and targeted soil sample results for arsenic, lead, cadmium, and zinc.

8600A79.001 0305 12/03/99 WA

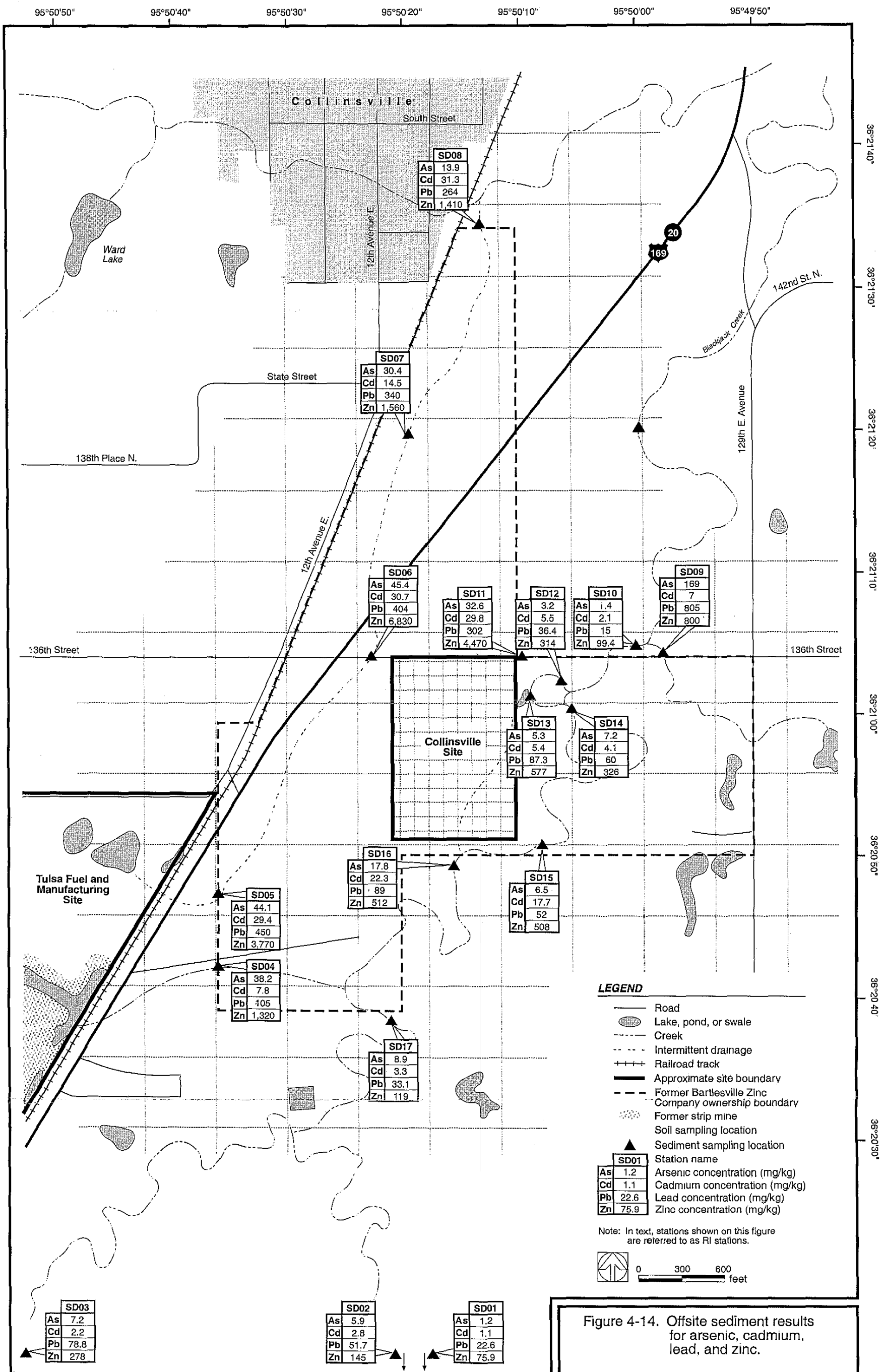


Figure 4-14. Offsite sediment results for arsenic, cadmium, lead, and zinc.

8600A79.001 0305 12/03/99 WA

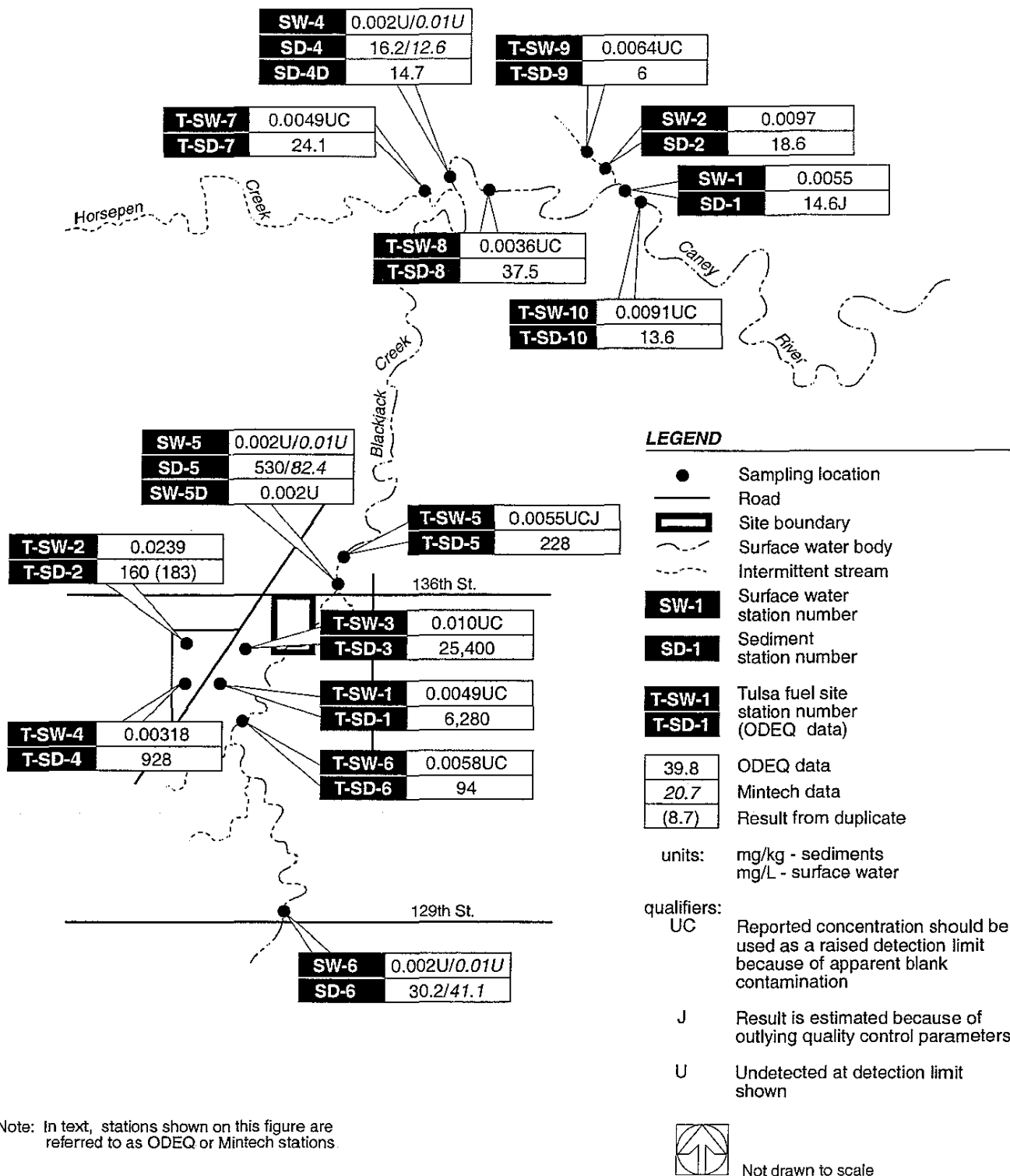


Figure 4-15. Sediment and surface water concentrations for lead from previous investigations.

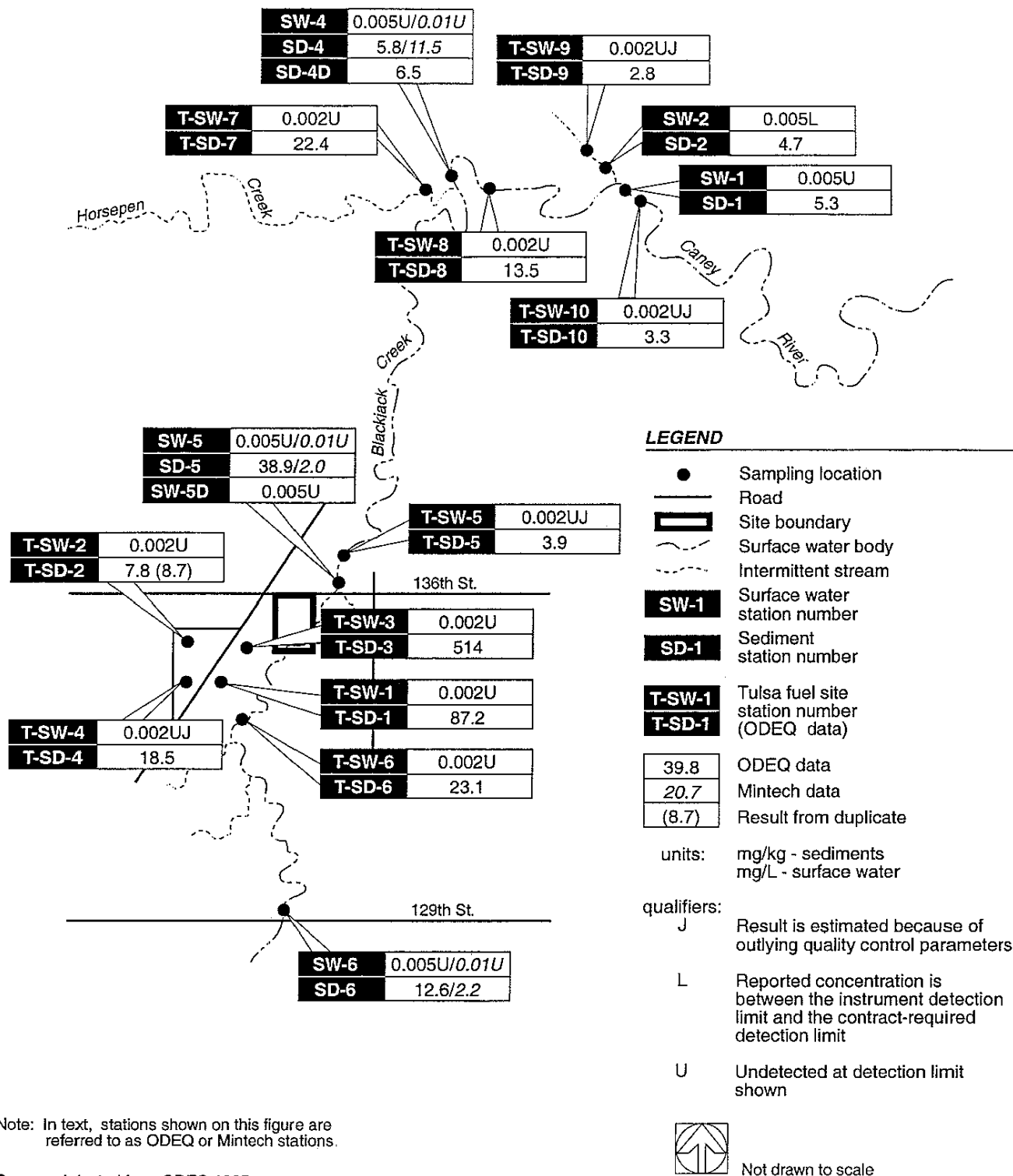
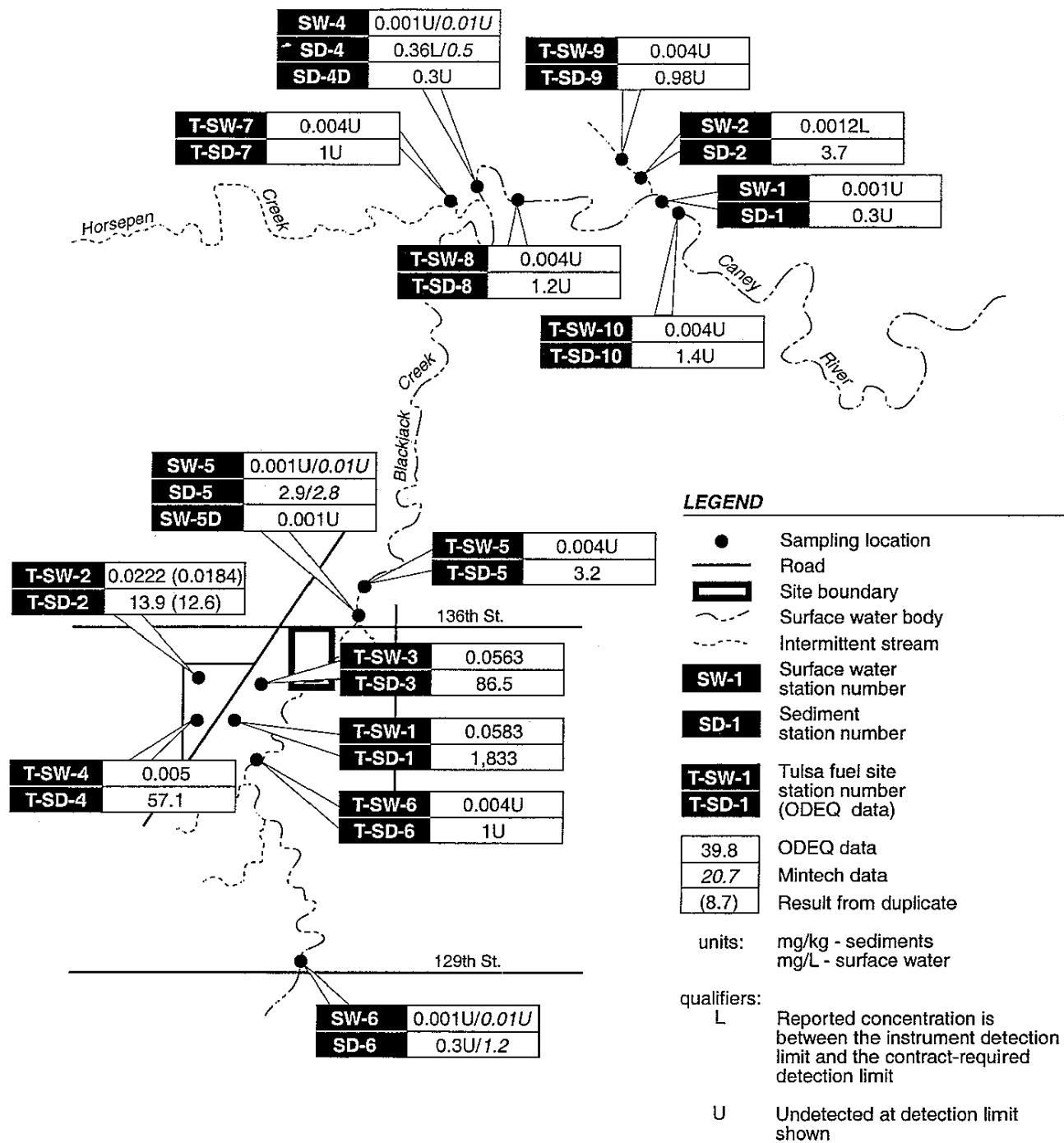


Figure 4-16. Sediment and surface water concentrations for arsenic from previous investigations.



Note: In text, stations shown on this figure are referred to as ODEQ or Mintech stations.

Source: Adapted from ODEQ 1995



Not drawn to scale

Figure 4-17. Sediment and surface water concentrations for cadmium from previous investigations.

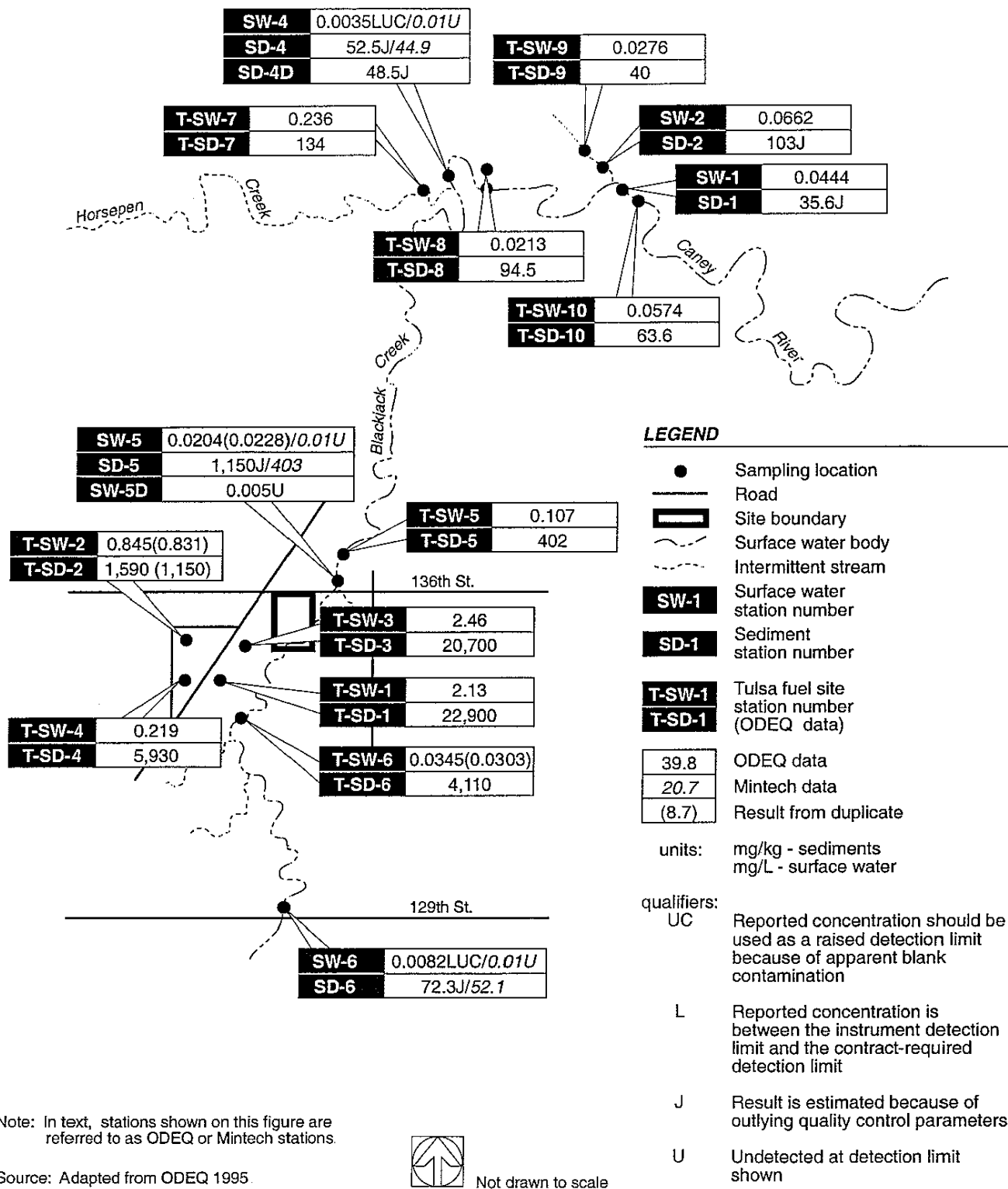
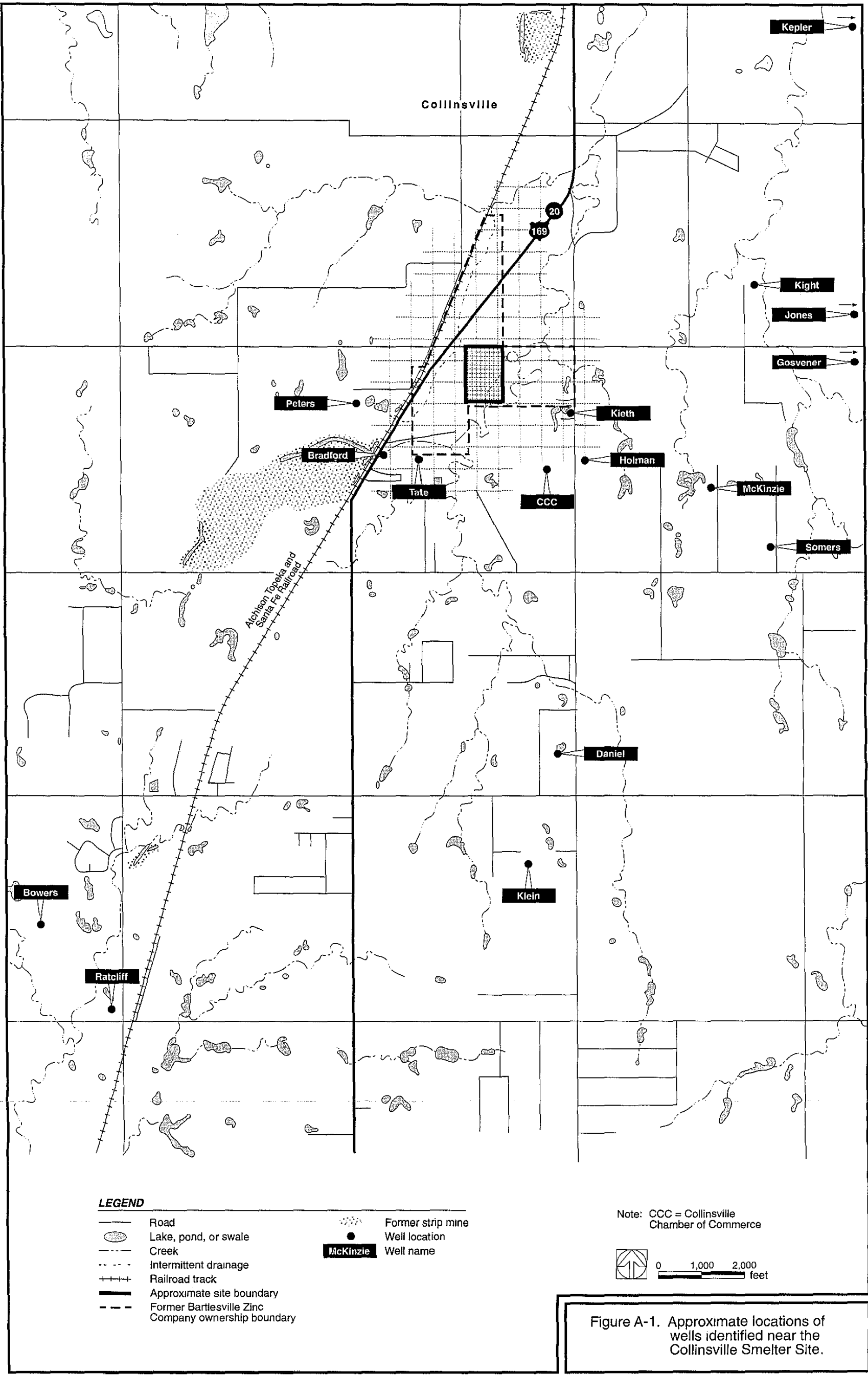
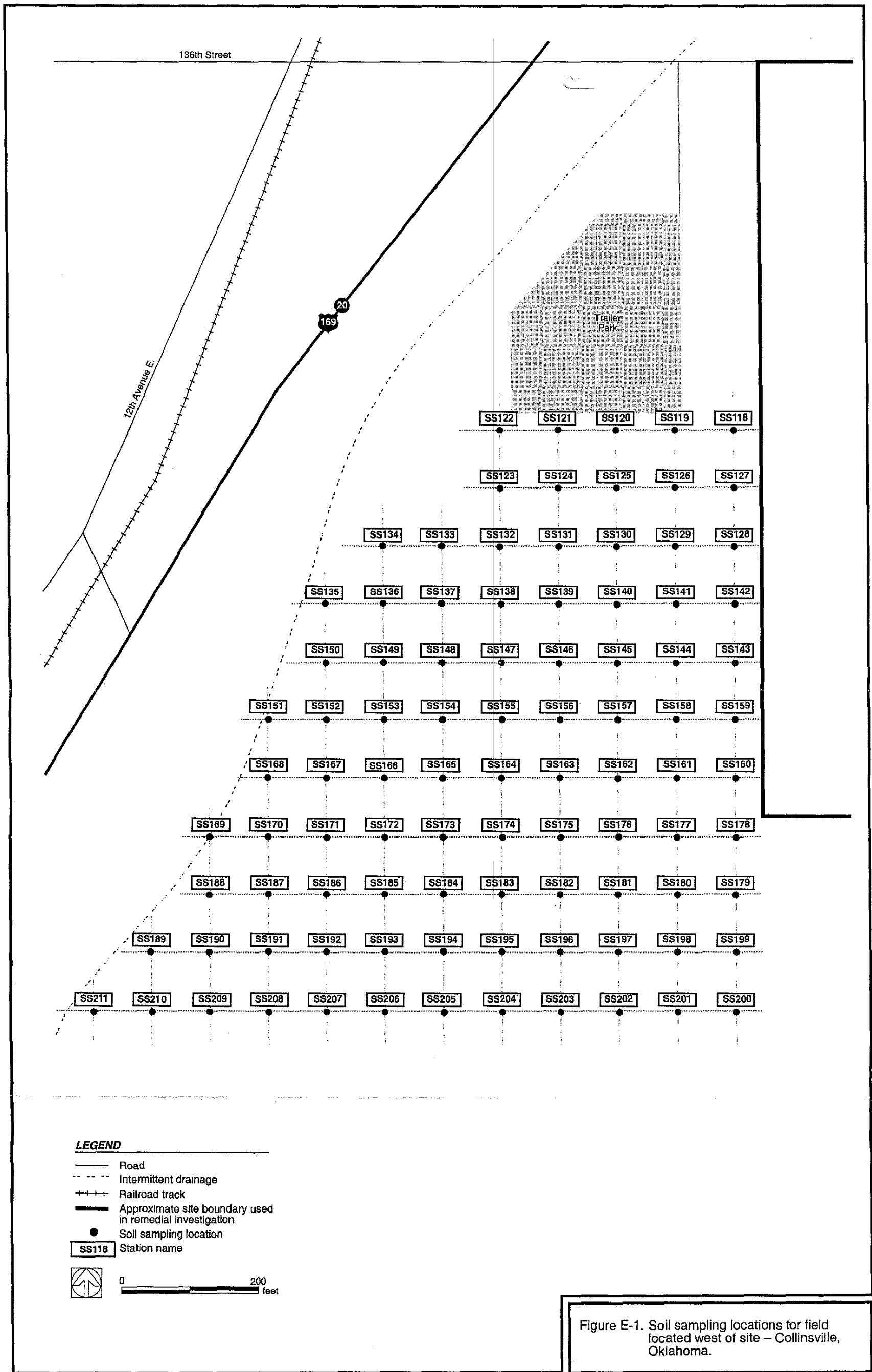


Figure 4-18. Sediment and surface water concentrations for zinc from previous investigations.



CA79-03-05 01/28/97 WA



8600A79.001 0305 12/03/99 WA

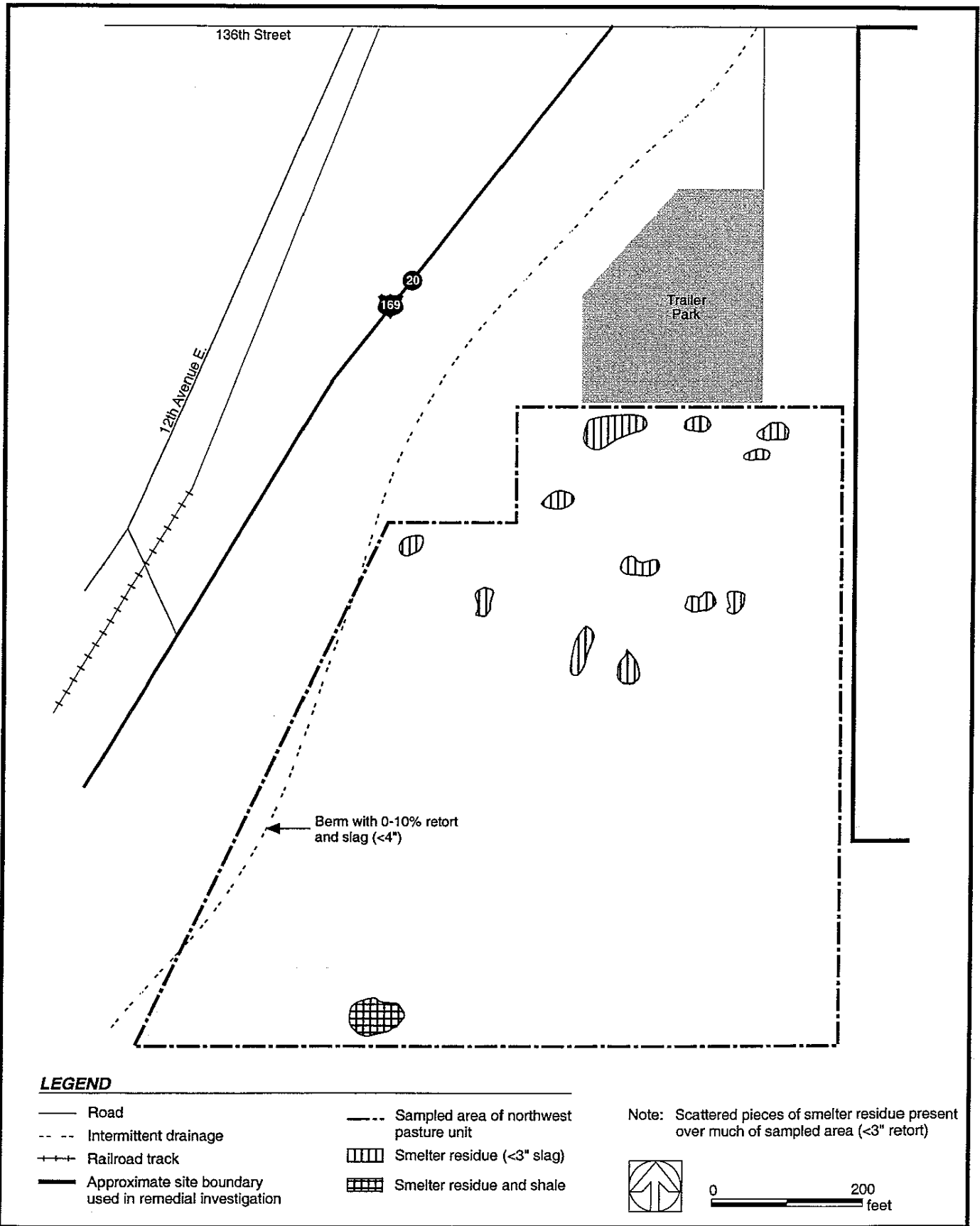
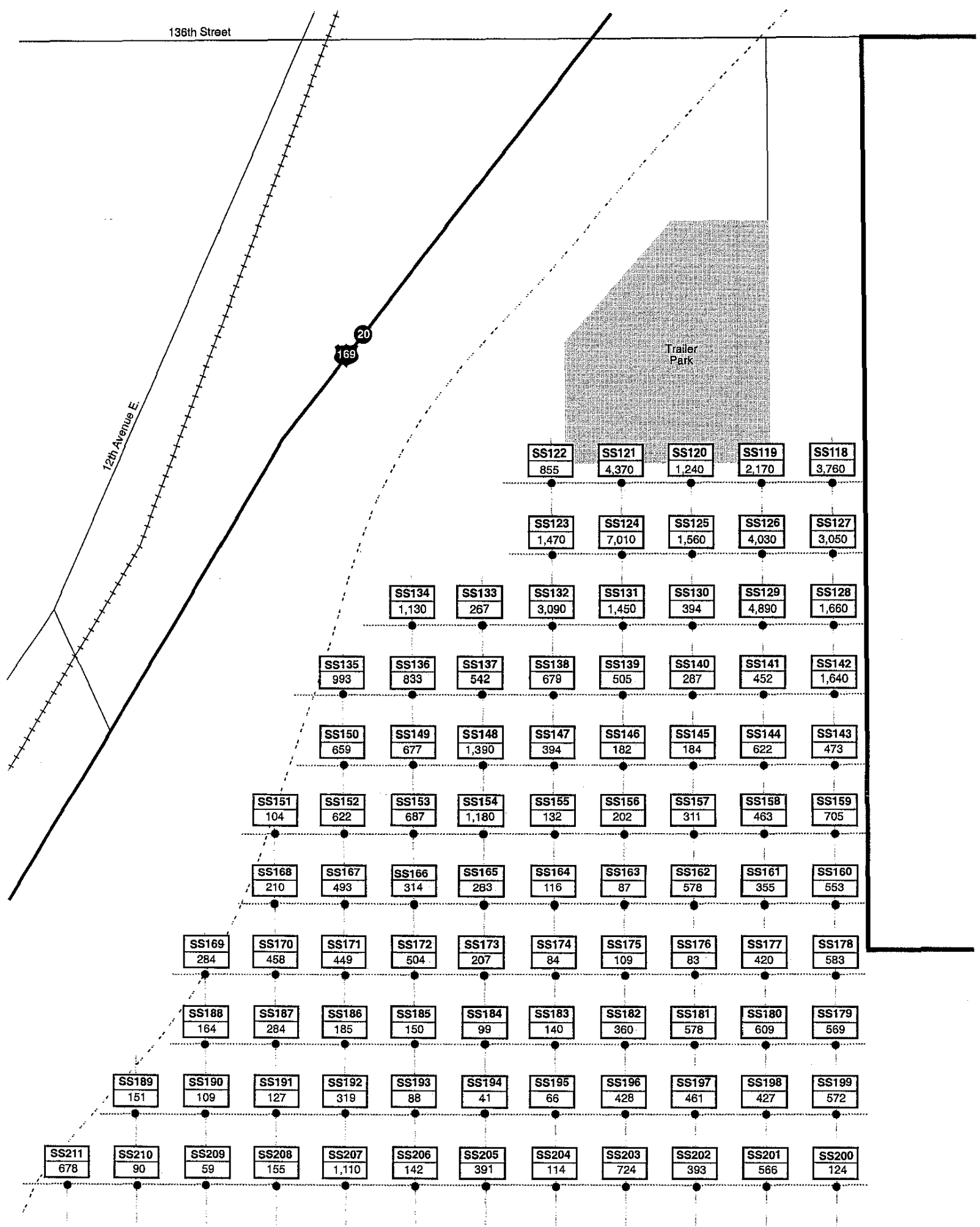


Figure E-2. Approximate locations of visible smelter material observed in Northwest Pasture Unit.



LEGEND

- Road
- - - Intermittent drainage
- + + + Railroad track
- Approximate site boundary used in remedial investigation
- Soil sampling location
- SS118 Station name
- 3,760 Lead concentration (mg/kg)



Figure E-3. Surface soil results for lead.

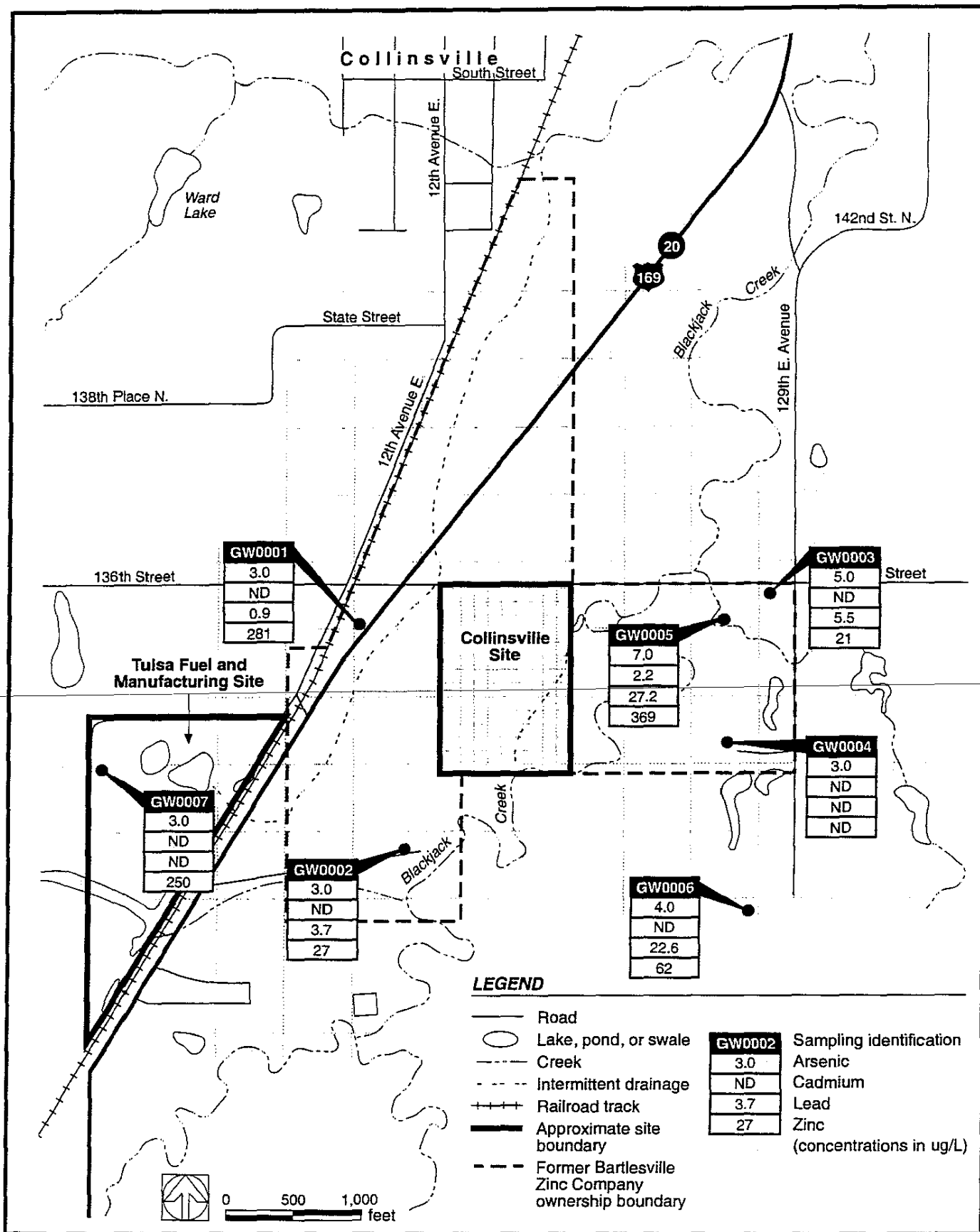


Figure E-8. Groundwater sampling results.

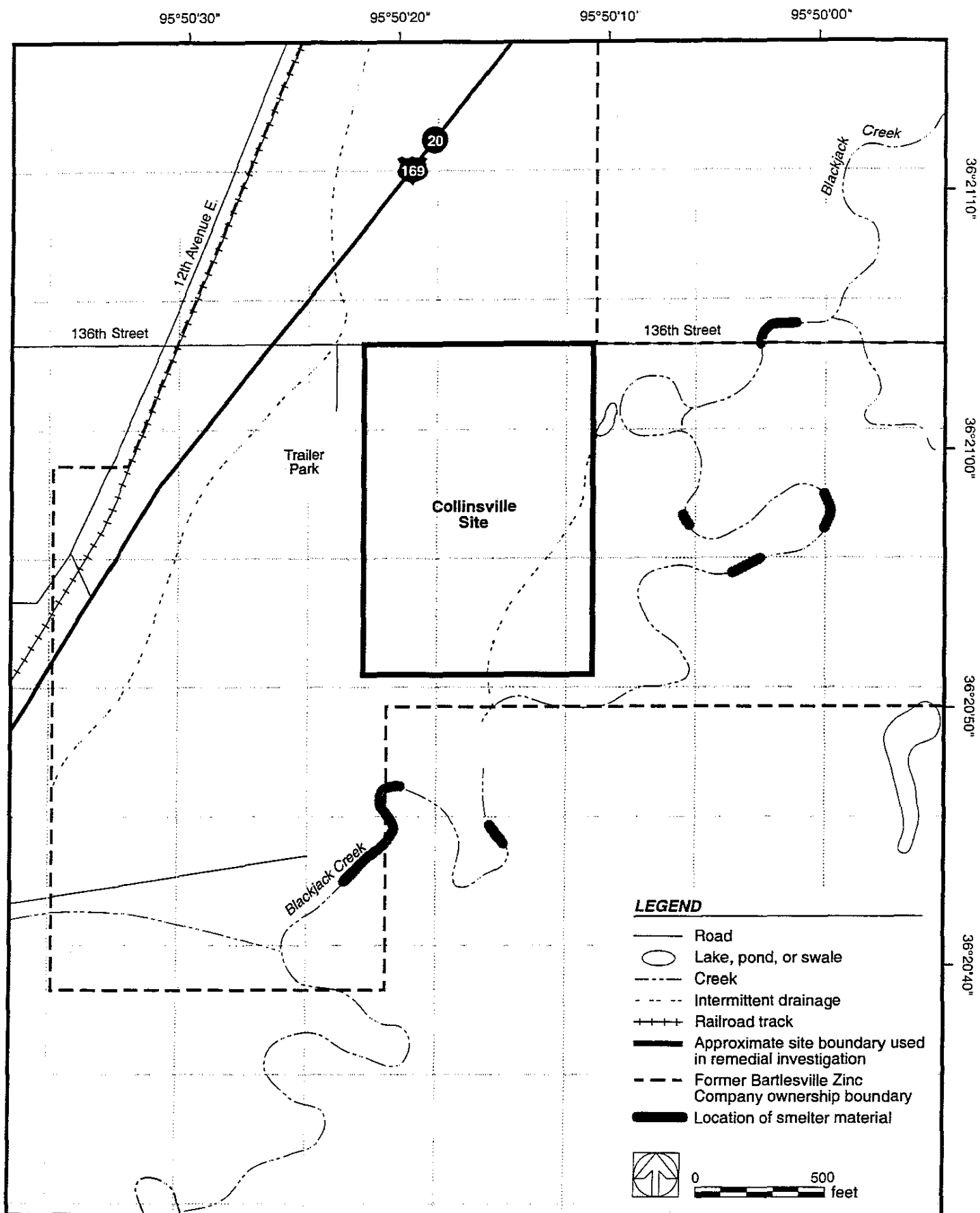


Figure E-9. Approximate locations of smelter materials observed near stream.

APPENDIX B

Boring Logs

Background Soil Borings

Drilling Log

Project Name TFM		Project Number 36478		Boring Number BG-SP-01	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct Push	2"	4'	NA	3	NA
Drilling Company CRC-CAD			Driller(s) Charley Smith, George Warden		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 08/16/05		To 08/16/05		Field Observer(s) David Barker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT, roots, 10YR 3/2 very dark grayish brown, damp, trace plasticity, soft-medium consistency	ML			1435	SS01				
2	CLAY, 10YR 4/2 dark grayish brown, dry-damp, trace plasticity, medium-stiff consistency	CL		3.9 4.0	1440	SS02 (n/a)				
3	CLAY same sand, 10YR 4/2 dark grayish brown, dry-damp, trace plasticity, stiff	CL			1445	SS03				
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001660

Drilling Log

Project Name TFM		Project Number 36478		Boring Number BG-SP-02	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct Push	2"	4'	NA	3	NA
Drilling Company CRC-CAD			Driller(s) Charley Smith, George Wooden		
Drilling Rig Truck Mounted			Type of Sampler 4' Acetate Sleeve		
Date 08/16/05		To 08/16/05		Field Observer(s) David Barker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT with CLAY, roots, 10YR 3/2 very dark grayish brown, damp, trace - medium plasticity, soft-medium consistency	ML			1515	SS01				
2	CLAY trace silt, 10YR 5/3 brown, dry, non plastic, st. FA	CL		3.8 4.0	1517	SS02				
3	CLAY trace sand, 10YR 4/3 brown, dry-damp, trace plasticity, medium-stiff consistency				1520	SS03				
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001661

Drilling Log

Project Name TFM		Project Number 36478		Boring Number BG-SP-03	
Ground Elevation		Location COLLINGSVILLE, OK		Page 1 of 1	
Air Monitoring Equipment NA				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT - RUSH	2"	4'	0'	3	0
Drilling Company CRC / CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEOPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 09/01/06		To 09/01/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT. BROWN (10YR 4/3) TO DARK BROWN (10YR 3/3) DRY TO DAMP, SOFT, NONPLASTIC				1030	SS01				
2	CLAY, MOTTLED, IRON STAINING, DRY, MEDIUM TO STIFF, NONPLASTIC			4/4	1033	SS02				
3						SS03				
4	TOTAL DEPTH 4'				1036					
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001662

Drilling Log

Project Name TFM		Project Number 36478		Boring Number BG-SP-04	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment				Total Footage 3'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	3'	0'	3	Ø
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEOPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 09/01/06		To 09/01/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0-0.1	SELT, SAND, CLAY, ROOTS				1050	SS01				NO RECOVERY 1-2'
1	CLAY, DARK BROWN (10YR 3/6) TRACE DARK REDDISH BROWN (2.5 YR 3/3), CAMP. SOFT TO MEDIUM, TRACE TO MEDIUM PLASTICITY, TRACE TO SOME SELT				1054	SS02				
2	SELT, DARK YELLOWISH BROWN (10YR 4/4 TO 10YR 3/4) DRY, SOFT, NON PLASTIC			3/4						
3	SELT TRACE SAND TRACE CLAY, DARK BROWN (10YR 3/6) TO BROWN (10YR 4/4) TRACE LIGHT BROWNISH GRAY (10YR 6/2) DRY, SOFT, NON PLASTIC					SS03				
4	SELT WITH CLAY, TRACE SAND, VERY DARK GRAYISH BROWN (10YR 3/2), CAMP. SOFT, TRACE TO MEDIUM PLASTICITY				1100					
TOTAL DEPTH 4'										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001663

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SG-SP-05	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	4'	0'	3	0
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEOPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 09/01/06		To 09/01/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT AND CLAY VERY DARK GRAYESH BROWN (10YR 3/2) GRADING TO DARK BROWN (10YR 3/3) DAMP, SOFT, TRACE TO MEDIUM PLASTICITY				1110	SS01				
2	CLAY, DARK BROWN (10YR 3/3) TO DARK YELLOWISH BROWN (10YR 4/3), DAMP, MEDIUM TO STIFF, TRACE PLASTICITY			4/4	1113	SS02				
3	AT 2-1' GRADING TO MOTTLED, IRON STAINING, STIFF					SS03				
4	TOTAL DEPTH 4'				1116					
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001664

Drilling Log

Project Name TFM		Project Number 36478		Boring Number B6-SP-06	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 2.2'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	1.9'	0.3'	2	0
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEDPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 09/01/06		To 09/01/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELF AND CLAY, VERY DARK GRAYISH BROWN (10YR 3/4) TO VERY DARK BROWN (10YR 1/2), DAMP, SOFT, MEDIUM PLASTICITY, ROOTS				1:30	SS01				
	GRADING TO DARK GRAYISH BROWN (10YR 4/2)			2.2						
2	CLAY, DARK GRAYISH BROWN (10YR 4/2) TO MOTLED, GRAY TO DAMP, MEDIUM TO STEEP, NON TO TRACE PLASTICITY, LEAD STAINING			2.2		SS02				
	1' SANDSTONE, VERY PALE ORANGE (10YR 8/2) TO PALE YELLOWISH BROWN (10YR 4/2), WEAK, HIGHLY WEATHERED									
3	TOTAL DEPTH 2.2'									
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001665

Drilling Log

Project Name TFM		Project Number 36478		Boring Number BG-SP-07	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	4'	0'	3	0
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEDPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 09/01/06		To 09/01/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT, ROOTS, DARK GRAYISH BROWN (10YR 4/2) TO VERY DARK BROWN (10YR 2/2) ARG-CAMP, SOFT, NON TO TRACE PLASTICITY				1:50	SS01				
	GRADING TO MEDIUM TO STIFF									
2	CLAY, TRACE SELT, DARK GRAYISH BROWN (10YR 4/2) TO BROWN (10YR 4/3) TRACE DARK REDDISH BROWN (2.5YR 4/3) ARG. STIFF, NONPLASTIC				4/4	SS02				
3	GRADING TO MOTTLED, IRON STAINING					SS03				
4	TOTAL DEPTH 4'				1:56					
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001666

On-Site Soil Borings

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-01	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 9 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	RIP (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0	10YR 5/4, Yellowish Brown, SILT & SAND, Dry, Non Plastic, Stiff	ML				SS01	1005	4-0 up	SA-1000	Start
1	SILT, SAND, CLAY, SHALE, 10YR 5/4, Dry, Non Plastic, medium consistency					SS02	1010			1
2	Fragmented Shale (LOAM)									2
3										3
4				3 3/4		SS03	1020			Stop 1025 4
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001668

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-02						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	Roots, dry, silt, some sand, 10% silt, yellowish brown, non plastic, medium consistency	ML		0.5/0.5	1048	5501	1048			Start 1048
1										Stop 1050
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001669

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-03	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	Pb (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT-SAND, Dry, 10YR 4/2, Non Plastic, Moist	ML				SS01	1056			Next 1055
1	SILT LOAM, Dry, 10YR 5/2, Brown, Trace Plastic					SS02	1057			
2										
3	Same as above, Fragmented Shale					SS03	1059			
4				4/4						
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001670

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-04						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	Light SAND, 10/14 1/2 Brown, dry. Roots, Non Plastic, 2HIT	ML		0.5/0.5		SS01	1116			Start 1115
1										Stop 1120
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001671

Drilling Log

Project Name TFM		Project Number 26472		Boring Number 5A-05						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Aush	2"	0.5'	NA	(1) 3 Jars	NA					
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-29-05		To 7-29-05		Field Observer(s) Purgett Stank						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
3	SILT & F. SAND, 10% 3/4, brown, soft, dry, Trace Plastic	ML		05/0.5	0850	SS01				Start 0848
1										stop 0852
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-06	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(2) 4 Jars	NA
Drilling Company CAL			Driller(s) Bob Kloth & Steve Wildings		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett - Fanks	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PH (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 3/2, Dry, Medium Consistency, Non to Trace Plastic	ML				SS01	0856			Start 0856
2	CLAY LOAM, 10YR 4/4, Very stiff, Medium to High Plastic, Damp	CH				SS02	0857	2 Dips SP-1001		1
3						SS03	0859			2
4				4/4						4
5										0900 stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001673

Drilling Log

Project Name TFM		Project Number 26478		Boring Number 5A-07						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor		Total Footage 0.5'								
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct. Push	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company LRC			Driller(s) Rob Kloth & Steve Waldrup							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT, 10 YR 3/2. Silt, Org. Resids, Am Plastic	ML		08/05	0900	5501				Start 0905
1										Stop 0912
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001674

Drilling Log

Project Name TFM		Project Number 36478		Boring Number 5A-08						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck Mounted			Type of Sampler 4' Acetate Shovel							
Date 7-28-05		To 7-28-05		Field Observer(s) Burrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	CLAY, some silt, 10% 3/4, Org. silt, trace plastic	CL		0.5/0.5		501	1230			Start 1225
1										Stop 1233
2										
3										
4										
5										
6										
7										
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BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001675

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-09	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company LAC			Driller(s) Bob Klotz & Steve Waldrup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	Silt & F. SAND, dry, 10YR5/6, silty, non plastic	ML				5501	1240			start 1238
2	Silt & CLAY, 10YR5/2, Grayish Brown, medium plastic, very stiff, dry	ML				5502	1242			
3						5503	1245			
4				4/4						stop 1245
5										
6										
7										
8										
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10										
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14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001676

Drilling Log

Project Name JFM		Project Number 36478		Boring Number 5A-10	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 5 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barnett Sturcke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT SAND, 10YR 2/3, V.G. G., soft. Non Plastic, Fine Sand, Org	ML				SS01	1257			Start 1255
1	SILT CLAY (Silt, Sand & Clay), Med. st, 10YR 2/3, Brown, High Plastic, stiff	MH				SS02	1300			1
2										2
3						SS03	1303			3
4				4/4						4
5										Stop 1305
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001677

Drilling Log

Project Name JFM		Project Number 36478		Boring Number SP-11	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 5 Jars	
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck Mounted			Type of Sampler 4' Accurate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	RID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, some Sand 10% R 1/2, Soft, Roots, Dry, Non Plastic	ML				SS01 1337 & Avg SP-1002				Start 1335
1						SS02 1340				1
2	CLAY, some SILT, 10% R 4/3, Brown, Dry, Trace to medium Plastic, Stiff	CL								2
3						SS03 1345 & m/s/m/s				3
4				4/4						4
5										Stop 1345
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001678

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-12						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Aush	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company CAC			Driller(s) Bob K'loth & Steve Waldo							
Drilling Rig Truck Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-28-05		To 7-28-05		Field Observer(s) Barnett Stankovic						
Depth (feet)	Description	Class	Blow Count	Recov. %	Run/ Time	Sample Desig.	PHD (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT. Sand Fine Sand, 10mm 3/4, Non Plastic, Soft	ML		0.5/0.5		JS01	1400			Start 1335
1										Stop 1403
2										
3										
4										
5										
6										
7										
8										
9										
10										
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12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001679

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-13	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor		Total Footage 4'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CAC			Driller(s) Bob Kliff & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stankle	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	BIB (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	Silt + SAND, dry, 10YR 5/2, Non Plastic, Stiff, Roots	ML				S501	1126			Start 1125
1	CLAY, some with sand, 10YR 4/4, medium Plastic, Stiff, Damp	CL				S502	1127			1
2										2
3						S503	1129			3
4				4/4						4
5										Stop 1130
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001680

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-14	
Ground Elevation		Location Colinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	0.5'	NA	(1) 1 Jar	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4" Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Janke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	RAD (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	Silt & Sand, Org. 10% S/L, Brown, Soft, Non Plastic	ML		0.5		SS01	1156			Start 1150
1										Stop 1205
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001681

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-15						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 0.5'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	0.5'	NA	(1) 1 Jar	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-28-05		To 7-28-05		Field Observer(s) Barnett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT & SAND, 10% 2/4, 1.6. 6. brown, dry. 1st. Am. Partic.	ML		0.5/0.5		SS01	1210			start 1208
1										stop 1218
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001682

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-16	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Garrett Stange	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 2/2, Soft, Damp, Trace Plastic	ML			1437	SS01				1435 Start
1	Fine SANDY LOAM, 10YR 6/4, Damp, Trace Plastic, Soft				1440	SS02				
2										
2	CLAY, 10YR 5/2, Dry, Stiff, Trace to medium Plastic	CL			1444	SS03				2 Dup SP-1003
3					4/4					
4										1445 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001683

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-17	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CPC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Berrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILTY F. Sand, 10 YR 6/3, Dry, Soft, Non-Plastic, Roots	ML			1422	SSC1				1420 Start
2	SILTY LOAM, 10 YR 6/4, damp, friable, Traces to Medium Plastic				1425	SSC2				1
3					1430	SSC3				2
4				4/4						3
5										4
6										1420 Stop
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001684

Drilling Log

Project Name TFM		Project Number 26478		Boring Number SP-18	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor		Total Footage 4'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 5 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Walthrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Bourrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 2/2, Soft, Dry, Roots, Non Plastic	mh			1410	SS01				1408 Start
1	SANDY LOAM, Fine Sand, 10YR 6/4, Stiff, Damp, Trace to Medium Plastic				1412	SS02				1
2					1415	SS03				2
3										3
4				4/4						4
5										1415 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001685

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-19	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor		Total Footage 4'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CAC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Garrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0	Chalky Silt	ml								1315 Start
1	SILTY F. SAND, 10YR 2/3, Stiff Dry, Non Plastic				1320	SS01	Aug SP-1004			
2	SILTY LOAM, 10YR 5/3, Stiff, Damp, Trace to Medium Plastic				1322	SS02				
3					1325	SS03				
4				4/4						1326 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001686

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-20	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
2	SILTY F. SAND, 10YR 5/2, Jc 4, Rooty Dry, Non Plastic	ML			1012	SS01	2 m/s/m/s			1010 Start
1	CLAY LOAM, 10YR 4/3, St. H, Damp, Trace to medium Plastic				1015	SS02				1
2	SILTY LOAM, 10YR 6/4, St. H, Dry, Non to Trace Plastic									2
3	CLAY LOAM				1020	SS03				3
4				4/4						1020 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001687

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-21						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Air	2"	4.0'	NA	(3) 3 jars	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 7-29-05		To 7-29-05		Field Observer(s) Barnett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	Silt to f. sand, 10YR 3/4 dry. Am. Martie, Soft, Rock	mh				SS01	0955			0950 Start
2	CLAY, some silt to f. sand, 10YR 5/3, damp, soft to stiff, medium to high plastic	CH				SS02	0957			1
3						SS03	1000			2
4				4/4						3
5										4
6										1000 Stop
7										
8										
9										
10										
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12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001688

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-22						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	4.0'	NA	(3) 6 Jars	NA					
Drilling Company CRL			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Hydraulic Sleeve							
Date 7-29-05		To 7-29-05		Field Observer(s) Barnett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	RID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
3	SILT & F. SAND, 10% R 3/4, Silty, Roots, Dry, non Plastic	mh				SS01	0930			0928 start
2	CLAY & F. SAND, 10% R 3/4, Silty, medium to High Plastic, damp					SS02	0935 & Dup SP-1065			1
2	CLAY, Same as above	CH				SS03	0938			2
3										3
4				4/4						4
4										0940 stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001689

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-23	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 5/3, Brown, Dry, Rock	ML				SC1	0918			0915 Start
	Silt. Non Al. & tie					SC2	0920			1
2	CLAY, 10YR 4/2, Stiff, Damp, High Al. & tie	CH								2
3						SC3	0923			3
4				4/4						4
5										0925 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001690

Drilling Log

Project Name TFM		Project Number 26478		Boring Number SA-24	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Walchup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT & F. SAND, 10YR 2/3, Soft, dry, non-plastic	ML			1130	SS01				1125 Start
1	CLAY LOAM, 10YR 6/4, stiff, Trace Plastic, dry				1135	SS02				1
2	Same as above, soft									2
3					1140	SS03				3
4				4/4						4
5										1140 Stop
6										
7										
8										
9										
10										
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12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001691

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-25	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 8 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck - Mounted			Type of Sampler 4' Acetate 5/16"		
Date 9-29-05		To 9-29-05		Field Observer(s) Barrett Stauder	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILTY LOAM, 10YR 7.5, Trace Plastic, silt Dry	ML			1055	SS01				1050 Start
6	CLAY LOAM, 10YR 8.5, Medium to silt, Medium to High Plastic, Comp	MH			1100	SS02	4 Dup SP-1006			1
2										2
3					1105	SS03				3
4				4/4						4
5										1105 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001692

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-26	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CRC			Driller(s) Bob K'loft & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 7/2, Dry, Soft, Rocky, Non Plastic	ML			1032	SS01				Start 1030
2	CLAY & F. SAND, 10YR 6/4, Damp, St. H, Trace Plastic				1035	SS02	c ms/msb			
3	CLAY LOAM, 10YR 5/2, Damp, Soft High Plastic	MH			1038	SS02				
4				4/4						Stop 1040
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001693

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-27							
Ground Elevation		Location Collinsville, OK		Page 1							
Air Monitoring Equipment Personal Air Monitor		Total Footage 4'									
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples		No. of Core Boxes					
Direct-Push	2"	4.0'	NA	(3) 3 Jars		NA					
Drilling Company CAC			Driller(s) Bob Klotz & Steve Waldrop								
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve								
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Stanke							
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels	
							BZ	BH	S		
1	SLAG & pebbles & bricks Fine Sand & Silt Multiple Colors	GW				1338 5501				1335 Start	
2											1340 5502
3											
4	CLAY & SILT, 10% R 3/4, stiff, damp, Non-plastic	ML		4/4							
5										1345 Stop	
6											
7											
8											
9											
10											
11											
12											
13											
14											

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001694

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-28	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Rush	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Walberg		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 7/3, Dry. Non-Plastic, Soft SANDY LOAM, 10YR 5/4, Dry. Non-4 to Trace Plastic, Stiff	ML								Start 1028
2										
3										
4										
5										Stop 1042
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001695

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-29	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 6 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Standke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
3	SILT to Fine SAND, 10% 3/4, soft, Dry, Non-Plastic	ML			1510	5501				1505 Start
2	SANDY LOAM, 10% 3/4, soft, Dry, Trace to medium Plastic				1515	5502				1507
1					1520	5502				1507
4				3.5/4						1520 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001696

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-30						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment None				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct - Push	2"	4.0'	NA	(3) 3 Jars	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Walchops							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 8/1/05		To 8/1/05		Field Observer(s) Barrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILTY F. SAND, Some Pebbles, Roots, 10YR 4/3, Dry, Soft, Non-Plastic	ML			1145	SS01				1142 Start
1	SILTY LOAM, 10YR 4/3, Dry, Stiff, Trace Plastic				1150	SS02				
2	SANDY LOAM, 10YR 5/4, Very Stiff, Dry, Trace Plastic									
3					1153	SS03				
4				4/4						1155 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001697

Drilling Log

Project Name TFM		Project Number 36478		Boring Number 5A-31	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8/1/05		To 8/1/05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 7/2, Dry, Non-Plastic, Sandy	ML			1200	SS01				1155 Start
1	SILTY LOAM, 10YR 9/6, Dry, Stiff, Trace Plastic				1202	SS02				
2					1205	SS03				
3	CLAY, 10YR 4/4, Damp, Very Stiff, Trace to medium plastic	CL		4/4						
4										1208 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001698

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-32	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct Push	2"	4.0'	NA	(3) 6 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8/1/05		To 8/1/05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
10	VERY F. SAND, 10YR 3/4, Dry. Roots, No Plastic, Soft	ML			1215	SS01				1212 Start
1	VERY LOAM, 10YR 6/4, Dry. No to Trace Plastic, Stiff				1220	SS02				1
2	CLAY, some F. SAND, 10YR 4/4, Trace to medium Plastic, Dry. Stiff	CL								2
2	to very Stiff				1225	SS03	o Dup SP-1008			3
4				4/4						4
4										1230 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001699

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-33	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company LRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Ramett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0	Silt & sand, 10YR 2/2, soft, dry, roots, non plastic	ML			1238	5501	2 ms/msd			1235 start
1	Loam, 10YR 4/4, dry, trace plastic, very stiff				1240	5502				1
2	CLAY, trace s. sand, 10YR 5/6, dry, trace to medium plastic, stiff	CL			1245	5503				2
3										3
4				1/4						1247 stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001700

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-34	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 4/3, Dry, Soft, Non Plastic	ML			1125	5501				1120 start
2	CLAY LOAM, 10YR 5/4, Dry, Trace to Medium Plastic, Stiff				1128	5502				
3	CLAY, 10YR 5/4, damp, medium Plastic, Stiff	CL			1130	5503				
4				4/4						1132 stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001701

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-35						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment None				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA					
Drilling Company CAL			Driller(s) Bob Kloth & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 8/1/05		To 8/1/05		Field Observer(s) Barrett Stankus						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 4/3, Siltty, Dry, Asook, ml Non-Plastic	ML			1110	5501				1105 Start
1	F. SAND CLAY, 10YR 4/6, Dry, Non Plastic Stiff				1114	5502				1
2	CLAY, trace F. SAND, 10YR 4/6, Dry	CL			1118	5503				2
3	Trace to medium Plastic, medium Consistency				4/4					3
4										4
5										1120 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001702

Drilling Log

Project Name TFM		Project Number 36478		Boring Number 5A-36	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 6 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
3	Silty F. Sand, 10YR 3/2, Dry, Soft, Roots, Non-Plastic	ML			1050	5501				1045 Start
2	SILTY LOAM, 10YR 3/3, Damp, Medium Plastic, Soft				1055	5502	2 Dup 5A-1009			1
1	CLAY, trace F. Sand, 10YR 5/4, Damp St. H, medium to high Plastic	CH			1100	5503				2
4				4/4						3
4										4
5										1103 stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001703

Drilling Log

Project Name TFM		Project Number 26478		Boring Number SP-37						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment None		Total Footage 4'								
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrup							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 8-1-05		To 8-1-05		Field Observer(s) Garrett Stankle						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10% 2/4, F. SAND, Org. Some SLAG Non Plastic, Soft	ML			1302	SS01				1300 Start
2	CLAY, trace silt & f. sand, 10% 2/4, Damp, Stiff to Very Stiff, medium to High Plastic	CH			1305	SS02				1
3					1308	SS03				2
4				4/4						3
4										4
5										1310 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001704

Drilling Log

Project Name TFM		Project Number 36478		Boring Number 5A-38	
Ground Elevation		Location Cellinville, OK		Page 1	
Air Monitoring Equipment None		Total Footage 4'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLAG, 10YR 2/2, Dry. Roots Shif, Non Plastic CLAY, 10YR 2/2, Dry. Shif, trace SLAG,	ML			1325	SS01				1315 Start
2	CLAY, 10YR 2/2, Dry. Shif, trace SLAG, Medium to High Plastic	CH			1330	SS02				very Hard to to Push Through
3					1333	SS03				
4				4/4						
5										1335 5/8"
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001705

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-39	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(2) 6 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-29-05		To 7-29-05		Field Observer(s) Barrett Starke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10% R 3/4, Dry, Non-Plastic, Soft, Adh	mh			1150	SS01				1145 Start
3	SLAG - Fine to Medium Sand	GW			1155	SS02				Hammer to Push
2	CLAY LOAM, 10% R 3/4, Soft, Dry, Trace Plastic	ML								
2	NR			2 3/4	1200	SS03	2 Dup SA-1010			
4										1200 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001706

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-40	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Airush	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CAL			Driller(s) Bob Klett & Steve Walchup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & FINE SAND, roots, 10YR 2/2, Dry, Soft, Non Plastic	ML				SS01	1510			Start 1508
2	SLAG, COAL, LEAD, SILT, FINE SAND	GW				SS02	1515 & m/m/m			1
3	CLAY, 10YR 2/2, Medium to High Plastic, Damp, Stiff to Very Stiff	CH				SS03	1520			2
4										3
5										4
6										Stop 1520
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001707

Drilling Log

Project Name TFM		Project Number 36478		Boring Number 5A-41	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stanka	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10% 3/4, soft, dry, roots, some SHAG, non-plastic	ML			1346	5501				1343 Start
2	CLAY, trace silt & sand, 10% 4/4, stiff, dry, medium plastic to High Plastic	CH			1350	5502				1
3					1353	5503				2
4				4/4						3
5										4
6										1355 Stop
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001708

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-42	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 5 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Lila/drop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Accurate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT F. SAND, 10% 3/4, Dry, Root, AP	ML			1418	SS01				1415 Start
1	SILTY LOAM, 10% 3/4, Dry, Trace Plastic				1420	SS02				1
2	CLAY, 10% 3/4, Dry, Very stiff	CL								2
3	Trace to medium Plastic				1425	SS02				3
4				4/4						1428 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001709

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-43	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Standke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
2	SILT, SLAB, & F. SAND, 10 YR 3/4, Rnds, Dry	ML			1442	SS01	2 Aug SP-1011			1440 Start
1	FINE SAND, trace silt, some CLAY, SANDY LOAM, 10 YR 4/3, Dry, stiff	SP			1445	SS02				1
2	Trace Plastic, W.S.									2
3	CLAY, 10 YR 5/4, damp, Medium Plastic, stiff, some F. SAND	CL								3
4				3.9/4	1450	SS03				1453 stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001710

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-44	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Rob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Garrett Stander	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & F. SAND, 10YR 6/3, Dry, roots, 1/2" Non Plastic	ML			1548	SS01				1545 Start
2	SANDY LOAM, 10YR 5/4, Dry, Trace Plastic, stiff				1550	SS02				1
3	CLAY, 10YR 4/3, Dry, Trace to medium CL Plastic, stiff	CL			1555	SS03				2
4				4/4						3
4										4
5										1600 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001711

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-45	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stank	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	1520 F SAND, 10YR 7.5. Root, Dry, Non Plastic, Very Silty SANDY LOAM/CLAY, 10YR 5/6, Dry, Trace to medium Plastic, Very Silty	ML			1507	SS01				1500 Start
				1505	SS02				1	
				1510	SS03				2	
			4/4					3		
4									1512 Stop 4	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001712

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-46	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct Push	2"	4.0'	NA	(2) 6 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
3	SILT & F. SAND, roots, 10YR 3/2, non-plastic, Dry, Soft	ML			1518	SS01				1515 Start
1	CLAY, 10YR 4/4, Dry, Trace to medium Plastic, Stiff	CL			1522	SS02				1510 Sup SP-1012
2										2
3	SANDY LOAM, 10YR 5/6, Dry, Trace Plastic, Medium to Stiff	ML			1528	SS03				3
4				4/4						4
4										1530 Stop
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001713

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-47	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Airch	2"	4.0'	NA	(3) 4 Jars	NA
Drilling Company CAL			Driller(s) Bob Kott & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT & FINE SAND, Roots, 10YR 2/2, Dry, Silty, Non Plastic	ML				SS01	1530			Start 1525
1	CLAY, Some Silty, 10YR 2/2 to 10YR 4/6, Trace to medium Plastic, Very Silty, Dry	CL				SS02	1535			
2										
3						SS03	1540 & ml/mls			
4				4/4						Stop 1540
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001714

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-48	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CAL			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Darrell H. Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	FINE SAND, Fine Sand, 10% 1/2, Rocks, non Plastic, Dry, Medium Coarseness	ML				SS01	1420			Start 1417
1	Same as above, Trace Coal, Pebbles					SS02	1422			(nick)
2	CLAY 10% 1/2, Yellowish Brown, Trace Plastic, Very Stiff, some Silt, Dry	CL				SS03	1425			
3										
4				3 3/4						stop 1425
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001715

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-49	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 6 Jars	NA
Drilling Company CAC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Accutote Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Danett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT Fine SAND, 10YR 7.5, Dry, Silty, Non Plastic	ML				SS01	1445			Start 1440
2	CLAY, Some Silty, 10YR 7.5, Brown, Trace to Medium Plastic, Very Stiff	CL				SS02	1450			1
3						SS03	1455 @ Dry SP-1012			2
4				4/4						3
5										4
6										Stop 1500
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001716

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-50	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment Personal Air Monitor		Total Footage 4'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	4.0'	NA	(3) 2 Jars	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 7-28-05		To 7-28-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	BIS (ppm)			Remarks/ Water Levels
							SE	BH	S	
1	SILT & FINE SAND, 10YR 7.5, Dry, Soft, Rdy, Non Plastic	ML				SS01	1558			Start 1555
1	FINE SAND	SP				SS02	1600			1
2	CLAY, some silt & sand, 10YR 4/4, Trace to Medium Plastic, damp, stiff	CL				SS03	1605			2
3										3
4				7/4						4
5										Stop 1605
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001717

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-51	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	4.0'	NA	(3) 3 Jars	NA
Drilling Company CRC			Driller(s) Rob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8/1/05		To 8/1/05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels							
							BZ	BH	S								
1	SILT & F. SAND, 10YR 7.5, Dry, Root, Soft to Medium Consistency, Non-Plastic SANDY LOAM, 10YR 5/4, Damp, Trace to Medium Plastic, Stiff to very Stiff	ML								1610 Start							
2																	
3																	
4				4/4						1622 Stop							
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001718

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-52						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment None				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Airch	2"	4.0'	NA	(2) 3 Jars	NA					
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrup							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 8/1/05		To 8/1/05		Field Observer(s) Barnett Stankus						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 6/3, Dry, Root, Non Plastic	ML			1630	SS01				1626 Start
2	SANDY LOAM, 10YR 4/4, Dry, Very Stiff, Trace Plastic to medium				1635	SS02				1
3					1640	SS03				2
4				4/4						3
4										4
5										1643 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001719

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-53	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	4.0'	NA	(3) 8 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck - Mounted			Type of Sampler 4' Accutote Sleeve		
Date 8-1-05		To 8-1-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0	5' 16" 10YR 6/3, Dry, Non-Plastic, 5% if	ML			1652	SS01	a Dup SA-1014			1648 Start
1	Roots				1659	SS02				1
2	SANDY LOAM, 10YR 5/4, Dry, Trace Plastic, Stiff to Very Stiff				1705	SS03				2
3										3
4				4/4						4
5										1710 Stop
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001720

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-54						
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1						
Air Monitoring Equipment NA				Total Footage 2'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
DIRECT-AUSH	2"	2'	0'	2	0					
Drilling Company CRC-CAD			Driller(s) STEVE WALORDA							
Drilling Rig TRUCK MOUNTED GEDROBE			Type of Sampler 4' ACETATE SLEEVE							
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT TRACELAY, DARK GRAYISH BROWN (10YR 4/2) TO VERY DARK GRAYISH BROWN (10YR 3/2), DAMP, MEDIUM TO STIFF CONSISTENCY, NON PLASTIC, TRACE ROOTS				2 1/2	SS01			0.0	ROOTS
2	GRADING TO GRAYISH BROWN (10YR 5/2), DRY CLAY, DARK BROWN (10YR 3/3), DRY MEDIUM TO STIFF CONSISTENCY, NON PLASTIC					SS02			0.0	IRON STAINING
	TOTAL DEPTH 2'				1003					
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001721

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-55	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 2'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT - PUSH	2"	2'	0'	2	0
Drilling Company CRC-CAO			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED BEDROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLT. AND SLAG, VERY DARK BROWN (10YR 4/2) TO VERY DARK GRAYISH BROWN (10YR 3/2). GRAY TO DARK SOFT CONSISTENCY, NON PLASTIC			2 1/2	1013	SSD1			0.0	ROOTS
2	SLT. DARK GRAYISH BROWN (10YR 4/2), BRN. SOFT CONSISTENCY, NON PLASTIC					SSD2			0.0	
TOTAL DEPTH 2'										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001722

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-56	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 4'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT - PUSH	2"	4'	0'	3	0
Drilling Company CRC-CAD			Driller(s) STEVE WALORON		
Drilling Rig TRUCK MOUNTED GEOPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, VERY DARK GRAYISH BROWN (10YR 3/2), DRY TO DAMP, SOFT CONSISTENCY, NON PLASTIC				1030	SS01			0.0	ROOTS
2	SILT, DARK GRAYISH BROWN (10YR 4/2), DRY, STIFF CONSISTENCY, NON PLASTIC				1034	SS02			0.0	
3	SILT, SOME CLAY, TRACE SAND, YELLOWISH BROWN (10YR 6/6), DRY, STIFF CONSISTENCY, NON PLASTIC					SS03			0.0	IRON STAINING
4	TOTAL DEPTH 4'				1038				0.0	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001723

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-57	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 2'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	1.4'	0.6'	2	0
Drilling Company CRC-CAD			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEDPROBE			Type of Sampler 4' ACETATE SLEEVE		
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SELT, DARK GRAYISH BROWN (10YR 4/2), SAND, SOFT CONSISTENCY, NONPLASTIC			1/2	1042	SS01			0.0	ROOTS
	SELT AND CLAY, BROWN (10YR 5/3), DRY, STIFF CONSISTENCY, NONPLASTIC				SS02			0.0		
2	SHALE AND CLAY, PALE BROWN (10YR 6/3), EXTREMELY WEATHERED, WEAK				1046					
TOTAL DEPTH 2'										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001724

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-58	
Ground Elevation		Location COULINXVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment NA				Total Footage 2'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
DIRECT-PUSH	2"	2'	0'	2	Ø
Drilling Company CRC-CAO			Driller(s) STEVE WALDROP		
Drilling Rig TRUCK MOUNTED GEORABRE			Type of Sampler 4' ACETATE SLEEVE		
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, DARK GRAYISH BROWN (10YR 4/2), DRY, STIFF CONSISTENCY, NON PLASTIC				1051	SS01				ROOTS
2	CLAY, DARK GRAYISH BROWN (10YR 4/2) TO BROWN (10YR 4/3), DRY, VERY STIFF CONSISTENCY, NON PLASTIC			2 1/2		SS02			0.0	IRON STAINING
2	TOTAL DEPTH 2'									
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001725

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SA-99						
Ground Elevation		Location COLUMBUSVILLE, OK		Page 1 OF 1						
Air Monitoring Equipment NA				Total Footage 4'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
DIRECT-PUSH	2"	4'	0'	3	0					
Drilling Company CRC-CAD			Driller(s) STEVE WALDROP							
Drilling Rig TRUCK MOUNTED GEDROBE			Type of Sampler 4' ACETATE SLEEVE							
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT, DARK GRAYISH BROWN (10YR 4/1), DRY, MEDIUM CONSISTENCY, NON PLASTIC				1103	SS01				ROOTS
1	CLAY, BROWN (10YR 5/3) TO DARK YELLOWISH BROWN (10YR 4/4), DRY, STIFF CONSISTENCY, NON TO TRACE PLASTICITY			4/4	1106	SS02			0.0	
2	BECOMING MOTTLED								0.0	IRON STAINING
3						SS03			0.0	
4	TOTAL DEPTH 4'				1108				0.0	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001726

Drilling Log

Project Name TFM		Project Number 36478		Boring Number SP-60						
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1						
Air Monitoring Equipment NA				Total Footage 2'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
DIRECT-PUSH	2"	2'	0'	2	0					
Drilling Company CRC-CAD			Driller(s) STEVE WALDROP							
Drilling Rig TRUCK MOUNTED GEOPROBE			Type of Sampler 4' ACETATE SLEEVE							
Date 08/18/06		To 08/18/06		Field Observer(s) DAVID BARKER						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0-0.1	0-0.1 SILT, VERY DARK BROWN (10YR 4/2), CAMP SOFT CONSISTENCY, NONPLASTIC				1113	SS01				ROOTS
1	CLAY, TRACE TO SOME SILT, ROOTS, DARK BROWN (10YR 3/3), DRY TO CAMP, STIFF CONSISTENCY, NON TO TRACE PLASTICITY			2 1/2		SS02			0.0	IRON STRAINING
2	BECOMING MOTTLED								6.0	
TOTAL DEPTH 2'										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001727

Temporary Piezometer Soil Borings

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-01	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 8.5'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Aush	2"	8.5'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
0	SILTY F. SAND, 10YR 3/4, Dry, Roots, Soft, Non Plastic	ML								0835 Start
1	SILTY LOAM, 10YR 5/4, Dry, Trace to Medium Plastic, Stiff									
2										
3										
4			4/4		0842	-				
5										
6										
7										
8	Weathered SHALE			3.8/4	0850	-				
			6.4	0.5	0905	-				Dry
9	Refusal @ 8.50'									0910 Stop
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001729

Drilling Log Continuation

						Boring Number	PZ-01			
Project Name						TFM	Page	2		
Project Number						36478	Date	8-2-05		
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
										0910 Install PVC casing 0911 Install Filter Pack (16 lbs) 0913 Install Plug (8 lbs)
	<p>The diagram shows a vertical cross-section of a well. A horizontal line at the top is labeled 'Ground Surface'. Below it, a section of the casing is labeled 'Bentonite Plug (3/8")' with a dimension of '1.5' bgs'. Below this is a section labeled 'Filter Pack (20/40)' with a dimension of '5.01'' and a note '0.010" Slotted Screen 1" casing (PVC)'. At the bottom, there is a section labeled '8.5' bgs'.</p>									<u>Filter Pack</u> (20/40) Filter S.I Industrial Quartz Unimin Corporation Voca, TX 76887 50 lbs/bags
										<u>Plug</u> (3/8", medium chip) Bentonite Pure Gold (CETCO) Colloid Environmental Technologies 1500 W. Shure Drive Arlington Heights, IL 60004 50 lbs/bags
										5.01' screen w/ slip cap 5.49' riser
'Not to Scale'										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001730

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-02	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 10.33'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	10.33'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILTY F. SAND, 10YR 5/2, Dry, Root, Silt, Non-Plastic	ML								0934 Start
2	SILTY LOAM, 10YR 5/4, Dry, Trace to medium Plastic, Stiff to Very Stiff									
3										
4				4/4	0936					
5										
6	CLAY, 10YR 5/4, Damp, medium to stiff, medium to high Plastic	CH								
7										
8				3.5/4	0940					
9										
10	Weathered SHALE			1.5/2.3	0944					Dry 10
11	Refusal @ 10.33'									0946 Stop
12	Fragmented Shale									
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001731

Drilling Log Continuation

Project Name TFM						Boring Number PZ-02				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	<p>Bentonite Plug (3/8")</p> <p>3'6"gs</p> <p>Filter Pack (20/40)</p> <p>10.33'6"gs</p> <p>Ground Surface</p> <p>0.010" Slotted Screen</p> <p>Screen => 5.00'</p> <p>Riser => 8.33'</p> <p>1" casing</p> <p>'Not to Scale'</p>									<p>0958 Install PVC casing</p> <p>0959 Install Filter Pack (16/40)</p> <p>1000 Install Plug (12.5/6r)</p>

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001732

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-02						
Ground Elevation		Location Collinsville, OK		Page 1						
Air Monitoring Equipment None				Total Footage 9.10'						
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes					
Direct-Push	2"	9.10'	NA	0	NA					
Drilling Company CRC			Driller(s) Bob Kloyt & Steve Waldrop							
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve							
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke						
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT, 10YR 3/2, Dry, Root, Soft, Non-Mark; ML									Start 1010
1	CLAY, 10YR 3/2, Dry, Stiff, Trace to Medium Plastic	CL								
2										
3										
4	SILTY LOAM, 10YR 6/4, Dry, Stiff, Trace to Medium Plastic	ML		3 3/4	1011					
5										
6										
7										
8				4 1/4	1014					
9	Weathered SHALE			1 1/2	1016					Dry 9
10	Refusal @ 9.10' bgs									1017 Stop
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001733

Drilling Log Continuation

Project Name TFM						Boring Number PZ-03				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
										<p>1030 Install PVC casing</p> <p>1031 Install Filter Pack (16 lbs)</p> <p>1032 Install Plug (12.5 lbs)</p> <p>0.010" Slot Screen</p> <p>1" casing</p> <p>Screen => 5.00'</p> <p>Riser => 7.64'</p>

BZ=Breathing Zone BH=Bore Hole S=Sample



051601 Form WCD-KC-2-2

TFM-0001734

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-04	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 10.50'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	10.50'	NA	(5) 10 Jars	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrup		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Steers		
Date 8-2-05		To 8-2-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILTY F. SAND, 10YR 4/3, Dry. Roots, soft to medium, Non-plastic	ML			1055	SS01				1048 Start
2	CLAY, 10YR 5/4, Stiff, Dry, Trace to medium plastic	CL			1057	SS02				1
3					1059	SS03				2
4	SILTY LOAM, 10YR 5/4, Damp, Medium plastic, medium to stiff	ML		4/4						3
5										4
6					1105	SS04				5
7										6
8				4/4						7
9	Weathered Shale									8
10					1110	SS05				9
11	Refusal @ 10.50' bgs SHALE			2 5/25						10 Dry
12										11 1108 Stop
13										12
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001735

Drilling Log Continuation

Project Name TFM						Boring Number PZ-04				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001736

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-05	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 11.66'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	11.66'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Kirt & Steve Widdrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT, 10YR 7.5, Dry, Roots, Soft, Non-Plastic	ML								Start 1552
1	SILTY LOAM, 10YR 5/4, Damp, Stiff to Very Stiff, Trace Plastic.									1
2										2
3										3
4	CLAY, 10YR 5/4, Dry, Stiff, Medium Plastic	CL		4/4						4
5										5
6	SILTY LOAM, 10YR 4/4, Damp, Stiff, Trace to Medium Plastic	ML								6
7										7
8				3.2/4						8
9										9
10										10
11	Weathered SHALE			2.0/2.7						11
12	Refusal @ 11.66' bgs									Stop 1602 12
13										13
14										14

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001737

Drilling Log Continuation

Project Name TFM						Boring Number AZ-05				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
										<p>1616 Install PVC casing</p> <p>1617 Install Filter Pack (20/40)</p> <p>1618 Install Plug (12.5 lbs)</p> <p>1" casing</p> <p>0.010" Slot Screen</p> <p>Screen \Rightarrow 5.00'</p> <p>Riser \Rightarrow 9.52'</p>

'Not to Scale'

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001738

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-06	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 10.10'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	10.10'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Kloth & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barnett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILTY F. SAND, 10YR 7/2, Dry, non-Plastic, Reddy Soft	ML								Start 1131
1	SILTY LOAM, 10YR 4/4, Dry, Trace Plastic, Very stiff									1
2										2
3	CLAY, 10YR 5/6, Dry, Trace to medium Plastic, St. ff	CL								3
4				4/4	1135	-				4
5										5
6										6
7										7
8				3 3/4	1140	-				8
9										9
10	Weathered SHALE			1.8/2.1	1142	-				Dry 10
	Refusal @ 10.10' bgs									Stop 1145
11										11
12										12
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001739

Drilling Log Continuation

[illegible]

BZ=Breathing Zone BH=Bore Hole S=Sample



051601 Form WCD-KC-2-2

TFM-0001740

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-07	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 10.25'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Airch	2"	10.25'	NA	(5)	NA
Drilling Company CRC			Driller(s) Bob Klett & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Starke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	Silty, 10YR 4/3, Silty, Rusty, Dry, Non-Plastic	GW			1215	SS01				1210 Start
2	SLAG & BRICK				1218	SS02				1
3	SILTY LOAM, 10YR 5/4, Dry, Trace Plastic	ML			1222	SS03				2
4	CLAY, 10YR 4/4, Damp, Medium Plastic, Silty				3.5/4					3
5	SILTY LOAM, 10YR 5/4, Damp, Trace to Medium Plastic, Silty	ML			1225	SS04				4
6					3.8/4					5
7		BD			1230	SS05				6
8	Weathered SHALE				2.25/2.5					7
9										8
10										9
11	Refusal @ 10.25' bgs									10 Dry
12										1230 Stop
13										11
14										12

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001741

Drilling Log Continuation

Project Name TFM						Boring Number P2-07				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
<p>plug (2/8")</p> <p>4'6"</p> <p>Filter Pack (20/40)</p> <p>10.35'</p> <p>12.5'</p> <p>5.05'</p>										<p>1232 Install PVC casing</p> <p>1233 Install Filter Pack (16 lbs)</p> <p>1235 Install Plug (12.5 lbs)</p> <p>1" Casing</p> <p>0.010" Slot Screen</p> <p>Screen by 5.05'</p> <p>Riser by 8.25'</p>

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001742

Drilling Log

Project Name TFM		Project Number 36472		Boring Number P208	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None		Total Footage 10.33'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct - Push	2"	10.33'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Starks	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 5/2, Org. Root, Soft, Non-Plastic	ML								1510 start
2	SLAG material	GW								
3	SILTY LOAM, 10YR 5/4, Org. 5+%, Trace to Medium Plastic	ML								
4				4/4	1515	-				
5										
6										
7										
8				4/4	1520	-				
9										
10	Weathered SHALE			2 1/2	1525	-				Org
11	Refusal @ 10.33' bgs									1525 stop
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001743

Drilling Log Continuation

Project Name						Boring Number	
Project Number						Page	
Date						Date	
Description						PID (ppm)	
Class						Remarks/	
Blow Count						Water Levels	
Recov.						BZ	
Run/ Time						BH	
Sample Desig.						S	
						<p>1529 Install PVC casing</p> <p>1530 Install Filter Pack (16 lbs)</p> <p>1532 Install Plug (12.5 lbs)</p> <p>1" Casing</p> <p>0.010" Slot Screen</p> <p>Screen \Rightarrow 5.03'</p> <p>Riser \Rightarrow 7.99'</p>	
<p>Not to Scale</p>							

BZ=Breathing Zone BH=Bore Hole S=Sample

**Burns &
McDonnell**

051601 Form WCD-KC-2-2

TFM-0001744

Drilling Log

Project Name TFM		Project Number 36478		Boring Number PZ-09	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 7.80'	
Drilling Type Direct-Aush	Hole Size 2"	Overburden Footage 7.80'	Bedrock Footage NA	No. of Samples 3	No. of Core Boxes NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Walchrop		
Drilling Rig Truck-mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Garrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLAG Material	GW			1422	SS1				1420 Start
2	SLAG, wet				1425	SS2				Wet 2
3	No Recovery	NA				SS3				
4	SLAG, wet	GW			1.8/4					
5	CLAY, 10YR 2/1, wet, medium consistency & plastic	CL			1444	SS4				
7	CLAY, 10YR 3/4, damp, medium plastic & consistency				3.5/3.8					Dry ↓
8	Refusal @ 7.80' bgs									1445 stop
9										
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001745

Drilling Log Continuation

Project Name TFM						Boring Number PZ-09				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
										<p>1452 Install PVC Casing</p> <p>1453 Install Filter Pack (16 lbs)</p> <p>1455 Install Plug (10 lbs)</p> <p>1" Casing</p> <p>0.010" Slot Screen</p> <p>Screen \Rightarrow 4.00'</p> <p>Riser \Rightarrow 8.58'</p>
<p>'Not to Scale'</p>										

BZ=Breathing Zone BH=Bore Hole S=Sample



051601 Form WCD-KC-2-2

TFM-0001746

Drilling Log

Project Name TFM		Project Number 36478		Boring Number AZ-10	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 7.25'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	7.25'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler 4' Acetate Sleeve		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, 10YR 5/2, Dry, Silty, Non-Plastic Rocks	ML								1314 Start
	SLAG material	GW								
2	SILTY LOAM, 10YR 5/4, Dry, Turns to medium Plastic, Silty to very silty some SLAG material	ML								2
3										3
4					3.0/4.0	1316				4
5										5
6										6
7					2.0/3.25	1321				Dry 7
8	Refusal @ 7.25' bgs									1322 Stop
9										9
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001747

Drilling Log Continuation

Project Name TFM						Boring Number AZ-10				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	<p>Ground Surface</p> <p>Plug (2 7/8") 2' 6 1/2"</p> <p>Filter Pack (20/40) 4.00'</p> <p>1.25" 6 1/2"</p> <p>6.25'</p> <p>'Not to Scale'</p>									<p>1328 Install AVE Casing</p> <p>1330 Install Filter Pack (16 lbs)</p> <p>1332 Install Plug (10 lbs)</p> <p>1" Casing</p> <p>0.010" 5/16" Screen</p> <p>Screen => 4.00'</p> <p>Riser => 6.25'</p>

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001748

Drilling Log

Project Name TFM		Project Number 36478		Boring Number AZ-11	
Ground Elevation		Location Collinsville, OK		Page 1	
Air Monitoring Equipment None				Total Footage 9.33'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
Direct-Push	2"	9.33'	NA	0	NA
Drilling Company CRC			Driller(s) Bob Klotz & Steve Waldrop		
Drilling Rig Truck-Mounted			Type of Sampler		
Date 8-2-05		To 8-2-05		Field Observer(s) Barrett Stanke	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
	SILT, 10YR2/2, Dry, Rst., Non-Plastic, Soft	ML								1240 Start
1	SILTY LOAM, 10YR5/4, Dry, very stiff, Trace Plastic									1
2										2
3										3
4				3 3/4	1245	-				4
5										5
6										6
7										7
8				4 1/4	1250	-				8
9	Weathered SHALE			13 1/2	1254	-				Dry 9
10	Refusal @ 9.33' bgs									1255 Stop
11										11
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001749

Drilling Log Continuation

Project Name TFM						Boring Number PZ-11				
Project Number 36478						Page 2				
						Date 8-2-05				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
										<p>1258 Install PVC Casing</p> <p>1259 Install Filter Pack (16 lbs)</p> <p>1300 Install Plug (12.5 lbs)</p> <p>1" PVC Casing</p> <p>0.010" Slot Screen</p> <p>Screen => 5.00'</p> <p>Riser => 6.46'</p>

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001750

Monitoring Well Drilling Logs

Drilling Log

Project Name TFM						Boring Number MW-1	
Project No. 36478						Page 1 of 1	
Ground Elevation			Location			Total Footage 11.7	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. Of Samples	No. Core Boxes	Depth to Water	Date Measured
HSA	6 1/4"	10 FT	1.7 FT	0	0	—	—
Drilling Co. CHEROKEE AMERICA DRILLING				Driller (s) STEVE WALDROP, RICH SAXTON			
Drilling Rig.				Type of Penetration Test SPLIT BARREL 5' CME			
Date 9/14/05		To 9/14/05		Field Observer (s) TIM STERNER, DAVE BARNER			

Depth	Description	Class.	Blow Count	Field Strength	Recov.	Sample or Box No.	Remarks
1	SILT, very dark gray 104R 3/1, damp, ^{medium} stiff, trace plasticity	ML					1005 START
1	SILT, trace sand, dark brown 104R 3/1, damp, medium stiff, trace plasticity	CL					
2	CLAY, same silt, trace sand, ^{trace gravel} mottled, iron stained, stiff, trace plasticity, veining throughout.				5/5		
3	Gravel content increases w/ depth.						
4							
5							
6							
7							
8	CLAY, trace silt & gravel, dark yellowish brown 104R 7/6, damp, soft, medium plasticity				5/5		
9	SAND lens @ 9.1 FT. Becomes stiff @ 9.0 FT. CLAY very friable @ 9.5 FT						
10	OLIVE GRAY SHALE, very weathered, iron staining	SH					
11	Red rust stained				2 1/2		
12	TOTAL DEPTH 11.7' FT BLS						1040 COMPLETE
13							
14							

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-2	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage 13.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	12.5'	0.5'	0	NA
Drilling Company CRC-CAD			Driller(s) Steve Waldrop, Rich Saxton		
Drilling Rig			Type of Sampler Split Barrel 5' core		
Date 09/16/05		To 09/16/05		Field Observer(s) David Barker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLAC, damp, unconsolidated slag gravel, brick debris, silty matrix, damp	GW			0814					
2	No Recovery			2.5/15						
3	CLAY, 10YR 4/2 dark grayish brown, damp-moist, medium plasticity, very soft, sand lens 3.8 ft - 4.0 ft, becomes stiff at 4.0 ft, some Fe staining	CL								
4										
5										
6	CLAY, mottled, damp, medium plasticity, stiff-very stiff, Fe staining	CL		5/5						
7										
8										
9	CLAY, 10YR 4/4 dark yellowish brown, damp, medium-stiff, medium plasticity	CL								
10	CLAY, mottled, damp, medium plasticity, medium consistency, heavy Fe staining	CL								
11				3/3						
12										
13	washed shale, olive gray, some Fe staining									
14	Total depth 13.0' bgs				0840					

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001753

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-3	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage 12.0	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	11.5'	0.5'	0	NA
Drilling Company CRC-CAD			Driller(s) Steve Waldrop, Rich Saxton		
Drilling Rig			Type of Sampler Split Barrel 5' core		
Date 09/16/05		To 09/16/05		Field Observer(s) David Barker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLAG, unconsolidated, broken retorts, slag gravel, brick debris, silty matrix, damp	GW			0931					
2	No Recovery			1.7/15						
3										
4										
5										
6	CLAY trace sand, 10 YR 4/4 dark yellowish brown, CL damp, medium-high plasticity, medium-stiff, trace Fe staining, becomes very stiff at 6.0' bgs, molting and Fe stains increase with depth, trace gravel throughout			5/5						
7										
8										
9										
10										
11				2 1/2						
12	Weathered shale, extremely friable, gray-dark gray				0958					
13	Total Depth 12.0' bgs									
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001754

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-4	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage 10.3'	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	8.5'	2.8'	0	NA
Drilling Company CRC-CAD			Driller(s) Steve Waldrop, Rich Sexton		
Drilling Rig			Type of Sampler Split Barrel 5' core		
Date 09/16/05		To 09/16/05		Field Observer(s) David Barker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLAG, damp, unconsolidated slag gravel, broken rebar, brick debris, silty matrix trace clay	GW			1124					
2	wet at 1.5'			2.2 5						
3	No Recovery									
4										
5										
6	CLAY, 100% very dark grayish brown, wet, medium-high plasticity, stiff, festoons, trace sand becomes molted at 6.0' bgs	CH		3.1 5						
7										
8										
9	Weathered Shale, gray									
10	Weathered Sandstone, fine-med grained, silty matrix				1159					
11	Total depth 10.3' bgs									
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001755

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-04D	
Ground Elevation		Location COCCASVILLE, OK		Page 1	
Air Monitoring Equipment NA		Total Footage 50.7'			
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
MSA/AIR CORE	4.25" / 2"	8.5'	42-2'	0	3
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP, CARL REED		
Drilling Rig C8000			Type of Sampler SPLIT BARREL 5' CORE / 8' CORE BARREL		
Date 08/15/06		To 08/17/06		Field Observer(s) DAVID BARKER, TIM STECHER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT W/ROOTS, VERY DARK BROWN (10YR 2/2), MOIST, SOFT, TRACE TO MEDIUM PLASTICITY				1258				0.0	
2	SLAG W/CLAY, TRACE SILT, TRACE SAND, MOTTLED TO VERY DARK BROWN (10YR 2/2), MOIST, SOFT, MEDIUM TO HIGHLY PLASTIC			1.7/5					0.0	NO RECOVERY 1.7'-5'
3										
4										
5	CLAY, TRACE SAND, TRACE LIMESTONE NODULES, MOTTLED TO GRAY (10YR 5/1) TO (10YR 6/1), MOIST, MEDIUM TO STIFF CONSISTENCY, MEDIUM TO HIGHLY PLASTIC				1305				0.0	
6				3.3/3.5	1310				0.0	
7	CLAY, TRACE SAND AND GRAYING TO GREENISH GRAY (5Y 5/1) LIMESTONE, BROWN (10YR 5/3) TO GRAYISH BROWN (10YR 5/2), DAMP, VERY STIFF, NON TO TRACE PLASTICITY, PLATEY								0.0	
8					1320					NO RECOVERY 8.3'-8.5'
9	LIMESTONE, PALE BROWN (5YR 5/2), MODERATELY TO HIGHLY WEATHERED, MODERATELY HARD, SANDSTONE LENSES (8.5'-9.5')			1/1	1416					
10	9.5'-10.5' GRADING TO LIMESTONE, LIGHT GRAY (N7), SLIGHTLY TO MODERATELY WEATHERED, MODERATELY HARD			1/1	1439					
11					1449					
12				0/3	1515					NO RECOVERY 10.5'-13.5'
13					1615					
14	SHALE, GRAYISH BLACK (N2) TO DARK GRAY (N3), FRESH TO SLIGHTLY WEATHERED, MODERATELY HARD				1650					
					0900					

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001756

Drilling Log Continuation

Project Name TFM						Boring Number MW-040				
Project Number 36478						Page 2				
						Date 08/16/06				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
14	SHALE, GRAYISH BLACK (N2) TO DARK GRAY (N3), FRESH TO SLIGHTLY WEATHERED, MODERATELY HARD									
15										
16				3.5/5						
17					0820					NO RECOVERY 17'-18.5'
18					0825					POOR RECOVERY CORE BROKEN DURING DRILLING
19	COAL, BLACK (N1), FRESH, STRONG, BRITTLE			6.5/12.5						NO RECOVERY 19'-21'
20					0845					
21					0930					
22	SHALE, CALCAREOUS LAMINATED TO BANDED WITH LIMESTONE, MEDIUM DARK GRAY (N4) TO VERY LIGHT GRAY (N5), FRESH TO SLIGHTLY WEATHERED, MODERATELY HARD TO HARD, SOME THIN BEDS OF UNCONSOLIDATED CLAY			1.7/5						CORE STUCK IN BARREL NO RECOVERY 22.7'-26'
23										
24										
25										
26					1006 1035					
27				1.6/3						NO RECOVERY 27.6'-29'
28										
29					1116 1125					NO RECOVERY 29.3'-29.7'
30	29.2-29.7 UNCONSOLIDATED CLAY, MEDIUM DARK GRAY (N4), VERY SOFT, HIGH PLASTICITY			1.5/4						NO RECOVERY 30.5'-33'
31										
32										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001757

Drilling Log Continuation

							Boring Number MW-040				
Project Name TFM							Page 3				
Project Number 36478							Date 08/16/06 - 08/17/06				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels	
							BZ	BH	S		
32	SHALE, CALCAREOUS, LAMINATED TO BANDED WITH LIMESTONE, MEDIUM DARK GRAY (M4) TO VERY LIGHT GRAY (M8), FRESH TO SLIGHTLY WEATHERED, MODERATELY HARD TO HARD, SOME THIN BEDS OF UNCONSOLIDATED CLAY				1200						
33					1210						
34				3/ 13.5							
35											
36					1300					NO RECOVERY 36-36.5	
37				0.5/ 10.5	1500 1525						
38				0.5/ 1	1535					NO RECOVERY 37.5'-38'	
39	39-39.3 UNCONSOLIDATED				1600	08/16/06					
40	39.6-40 UNCONSOLIDATED			2.5 2.5	0830	08/17/06					
41					0400						
42				155/ 2	0908					AT 41.5 0.45% OF YELLOWISH GRAY 54% NO RECOVERY 42.05'-42.5'	
43					0920						
44				2.3 2.5	1458						
45					1510					NO RECOVERY 44.8-45	
46					1520						
47				5.0 5.6							
48											
49											
50											

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001758

Drilling Log Continuation

Project Name TFM						Boring Number MW-040				
Project Number 36478						Page 4				
						Date 08/17/06				
Depth (feet)	Description	Class	Blow Count	Recov.	Run/ Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
50	SHALE, CALCAREOUS, LAMINATED TO BANDED WITH FINE SILEX MEDIUM DARK GRAY (M4) TO VERY LIGHT GRAY (M2). FRESH TO SLIGHTLY WEATHERED, MODERATELY HARD TO HARD, SOME FINE M30'S OF UNCONGLOMERATED MATERIAL				1538					NO RECOVERY 50-50.6'
51	TOTAL DEPTH 50.6'									OVERDRILLED WHEN CLEANING OUT BOREHOLE TO SET WELL. OVERDRILL 50' TO TD = 51.26' RSG 08/30/06

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-KC-2-2

TFM-0001759

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-5	
Ground Elevation		Location Collinsville, OK		Page 1 of 1	
Air Monitoring Equipment None				Total Footage 10.2	
Drilling Type	Hole Size	Overburden Footage	Bedrock Footage	No. of Samples	No. of Core Boxes
HSA	6 1/4"	7.2'	3.0'	0	NA
Drilling Company CRC-CAD			Driller(s) Steve Waldrop, Rich Saxton		
Drilling Rig			Type of Sampler Split Barrel 5' core		
Date 09/16/05		To 09/16/05		Field Observer(s) David Borker	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SLT with slag, roots, very dark brown 10YR 2/2 damp, trace plasticity, soft	ML			1243					
2	CLAY, 10YR 3/3 dark brown to 10YR 4/3 brown, damp, medium plasticity, soft	CL		4/5						
3	CLAY, mottled, damp, medium plasticity, stiff, Fe stains, veining									
4	CLAY, 10YR 4/1 dark gray, damp, medium plasticity, stiff, Fe stains + trace sand at 6.5' bgs	CL								
5										
6										
7				5/5						
8	Weathered shale, dark gray, very friable									
9										
10					1305					
11	Total Depth 10.2' bgs									
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001760

Drilling Log

Project Name TFM		Project Number 36478		Boring Number MW-06	
Ground Elevation		Location COLLINSVILLE, OK		Page 1 OF 1	
Air Monitoring Equipment N/A				Total Footage 8.65'	
Drilling Type HSA	Hole Size 6.25"	Overburden Footage 7.5'	Bedrock Footage 1.15'	No. of Samples 0	No. of Core Boxes 0
Drilling Company CRC/CAD			Driller(s) STEVE WALDROP, CARL REED		
Drilling Rig L 8000			Type of Sampler 2.5" SPLIT BARREL, 5" CORE BARREL		
Date 08/15/06		To 08/15/06		Field Observer(s) DAVID BARKER	

Depth (feet)	Description	Class	Blow Count	Recov.	Run/Time	Sample Desig.	PID (ppm)			Remarks/ Water Levels
							BZ	BH	S	
1	SILT, ROOTS, TRACE ROCKS, VERY DARK GRAY 10YR 3/1 TO VERY DARK BROWN 10YR 3/2, MEDIUM, DAMP, NON TO TRACE PLASTICITY				0945				0.0	
2	AT 1" DARK GRAYISH BROWN 10YR 4/2 TO VERY DARK GRAYISH BROWN 10YR 3/2, STIFF, DRY			3/5					0.0	
3	CLAY, MOTTLED TO DARK YELLOWISH BROWN 10YR 4/4 TO CHALKY BROWN 10YR 5/2, STIFF, DRY, NON PLASTIC								0.0	
4	2.5 - 3.0 LIMESTONE LAMINAE									
5					0955					
6	CLAY, MOTTLED TO GRAY 10YR 5/1 TO DARK YELLOWISH BROWN 10YR 4/6, MEDIUM CONSISTENTLY, DAMP, MEDIUM TO HEAVILY PLASTIC			2.5 / 2.5	0959				0.0	
7									0.0	
8	SANDSTONE, TRACE LIMESTONE, LIGHT BROWN 5YR 6/4 TO 5/6, HIGHLY WEATHERED, WEAR TO VERY WEAK, TRACE TO SOME CLAY				1010					
9	TOTAL DEPTH 8.65'				1035					
10										
11										
12										
13										
14										

BZ=Breathing Zone

BH=Bore Hole

S=Sample



051601 Form WCD-2-1

TFM-0001761

APPENDIX C
Trench Diagrams

Trench	Length	Width	Depth	Sketch
TR-01	NS 5	EW 3	5.5	SN W wall
	Soil	0-0.25		silt w/slag gravel, 10YR 3/2
	Slag	0.25-5		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal in a silty matrix
	Native	5-TD		clay - dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency
TR-02	NS 5	EW 3	5.5	SN W wall
	Soil		0	
	Slag	0-5		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead in a silty matrix
	Native	5-TD		clay - dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency
TR-03	EW 6	NS 3.5	5.5	EW S wall
	Soil		0	
	Slag	0-5		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead in a silty matrix
	Native	5-TD		clay - dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency
TR-04	EW 4	NS 3	3	EW S wall
	Soil	0-0.25		silt w/slag gravel
	Slag	0.25-2		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, friable fragments of smelter waste, slag gravel consisting of retort fragments, coal
	Native	2-TD		clay - very dark gray 10YR 3/1 to black 10YR 2/1, dry, trace plasticity, medium to hard consistency
TR-05	EW 4	NS 3	3.5	EW S wall
	Soil	0-0.25		silt w/slag gravel, 10YR 3/2, roots
	Slag	0.25-3		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, in a silty matrix
	Native	3-TD		clay - yellowish brown 10YR 5/8, damp, medium plasticity, medium consistency
	Notes			very little visible surficial slag present
TR-06	EW 3	NS 3	2.5	EW S wall
		0-.5		silt w/slag gravel, trace clay
		0.5-2		slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, in a silty matrix
		2-TD		clay - dark yellowish brown 10YR 4/6, damp, medium plasticity, medium consistency

al, lead in a silty m

TR-07	EW 6	NS 4	4 EW S wall
	Soil	0-0.5	clay w/slag gravel, molted, brick debris, concrete fragments
	Slag	0.5-2.75	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, bricks, concrete fragments, slag gravel consisting of retort fragments, brick debris
	Native	2.75-TD	clay - brown 10YR 4/3, damp, medium plasticity, medium consistency
TR-08	EW 7	NS 4	6 EW S wall
	Soil	0	
	Slag	0-4.75	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead in a silty matrix
	Native	4.75-TD	clay - dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency
TR-09	NS 7	EW 3	7.5 SN W wall
	Soil	0	
	Slag	0-6.5	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead, wood debris in
	Native	6.5-TD	clay - very dark gray 10YR 3/1 to black 10YR 2/1, moist to wet, high plasticity, soft to medium consistency
	Notes	water encountered at slag/clay interface (6.5 ft bgs)	
TR-10	NS 8	EW 4	8 SN W wall
	Soil	0	
	Slag	0-7	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragment, brick debris in a silty matrix (0-1.5 ft bgs)
	Native	7-TD	clay - dark gray 10YR 4/1 to very dark gray 10YR 3/1, damp, medium plasticity, medium consistency, some small roots
	Notes	tough trenching 6-7 ft bgs	
TR-11	NS 5	EW 3	2.5 SN W wall
	Soil	0-0.25	silt w/slag gravel, trace clay, roots present
	Slag	0.25-2	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, metal debris in a silty matrix
	Native	2-TD	clay - dark yellowish brown 10YR 4/4, damp, medium plasticity, medium consistency
TR-12	EW 5	NS 2.5	3 WE N wall
	Soil	0-0.5	silt w/slag gravel
	Slag	0.5-2.5	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, sticks, in a silty matrix
	Native	2.5-TD	clay - dark yellowish brown 10YR 4/4, damp, medium plasticity, medium consistency
	Notes	very little visible surficial slag present	

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a silty m

), in place cylindrical retorts (1.5-6 ft bgs), fine grained consolidated ~~smelter waste~~ (6-7
slag (from hot pour)

TR-13	NS 8	EW 3	6 SN W wall
	Soil	0	
	Slag	0-5.5	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragment, brick debris in a silty matrix (0-1.0 ft bgs)
	Native	5.5-TD	clay - very dark gray 10YR 3/1, damp, medium plasticity, medium consistency, some small roots
	Notes		tough trenching 3.5-5.5 ft bgs
TR-14	EW 6	NS 2.5	3.5 EW S wall
	Soil	0-0.5	silt w/slag gravel, sticks, roots
	Slag	0.5-3	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, in a silty matrix
	Native	3-TD	clay - brown 10YR 4/3 clay, damp, medium plasticity, medium consistency
TR-15	NS 6	EW 4	6 SN W wall
	Soil	0	
	Slag	0-4.75	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead, wood debris in
	Native	4.75-TD	clay - very dark gray 10YR 3/1, moist to wet, high plasticity, soft to medium consistency
	Notes		water encountered at 5.5 ft bgs
TR-16	NS 6	EW 2.5	3.5 NS E wall
	Soil	0-0.25	silt w/slag gravel
	Slag	0.25-2.75	slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead, in a silty matrix
	Native	2.75-TD	clay - yellowish brown 10YR 5/8, damp, medium plasticity, medium consistency
TR-17	NS 5	EW 2.5	2 SN W wall
	Soil	0-0.5	silt w/slag gravel, roots
	Slag	0.5-1	slag - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of retort fragments, coal, lead in a silty
	Native	1-TD	clay - yellowish brown 10YR 5/6 some sand, damp, trace to medium plasticity, medium consistency
	Notes		very little visible surficial slag present
TR-18	EW 5	NS 2.5	3 EW S wall
	Soil	0-0.25	silt w/slag gravel
	Slag	0.25-2.5	slag - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of retort fragments, coal, lead in a silty
	Native	2.5-TD	clay - yellowish brown 10YR 5/8, damp, medium plasticity, medium consistency
	Notes		very little visible surficial slag present

», in place cylindrical retorts (1.0-3.5 ft bgs), fine grained consolidated ~~smelter waste~~ (3.5-5.5
slag (from hot pour)

a silty m

' m

' m

TR-19 NS 5 EW 3 5.5 SN W wall

Soil 0

Slag 0-5 slag - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, consolidated fragments of smelter waste, slag gravel consisting of retort fragmen

Native 5-TD clay - very dark gray 10YR 3/1, moist to wet, high plasticity, soft to medium consistency

Notes water encountered at 4.5 ft bgs

TR-20 NS 5 EW 3 4.5 SN W wall

Soil 0-0.25 silt w/slag gravel

Slag 0.25-3.25 slag - unconsolidated, poorly sorted (fines to cobbles) - retort fragments, friable fragments of smelter waste, slag gravel consisting of retort fragments, c

Native 3.25-TD clay - dark graysih brown 10YR 4/2, moist to wet, high plasticity, soft to medium consistency

Notes water encountered at 3.5 ft bgs

TR-21 NS 5 EW 3 3.5 EW S wall

Soil 0-0.25 silt w/slag gravel, roots

Slag 0.25-2.5 slag - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of retort fragments, coal, lead in a silty

Native 2.5-TD clay - brown 10YR 4/3 to dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency

Notes very little visible surficial slag present

its, coal, lead, wood debris in a silty r

coal, lead in a silty n

' m



011200 Form GCO-29

Client ODEQ - TFM

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Project 36478

Date _____ Made By _____

Trenching Logs

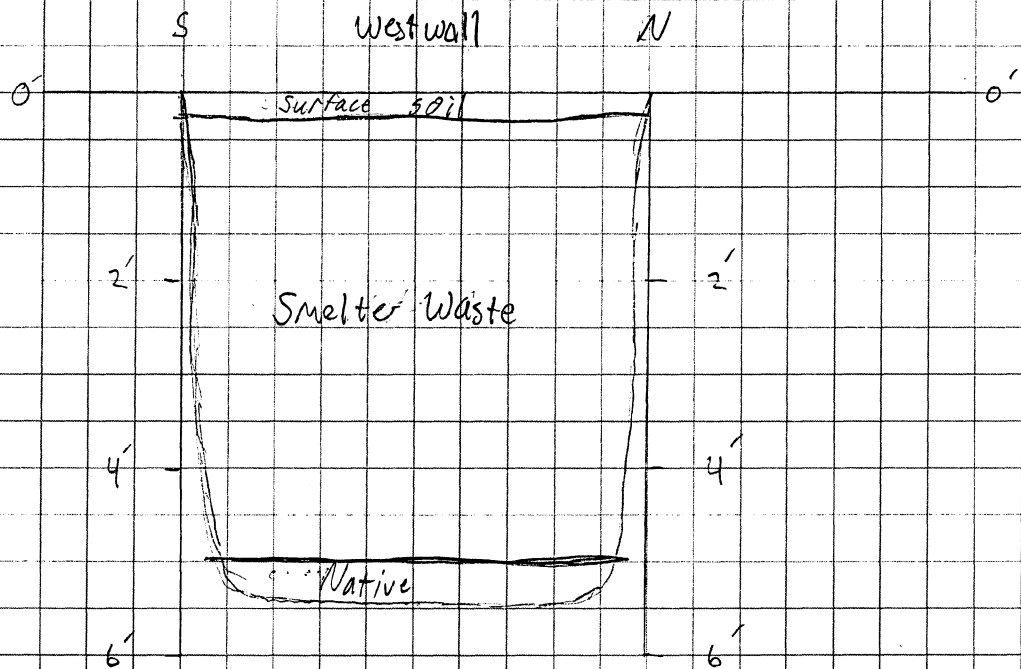
Checked By _____

TR-01

Preliminary _____ Final _____

1"=2' Horizontally & Vertically

TR-01 (5' x 3' x 5.5')



Surface soil (0' - 0.25') - silt w/ slag gravel 10YR 7/2

Smelter waste (0.25' - 5') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal in a silty matrix

Native zone (5' - 5.5') - clay, dark grayish brown 10YR 4/2, damp, medium plasticity, medium consistency



011200 Form GCO-29

Client ODEQ - TFM

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Project 36478

Date _____ Made By _____

Trenching Logs

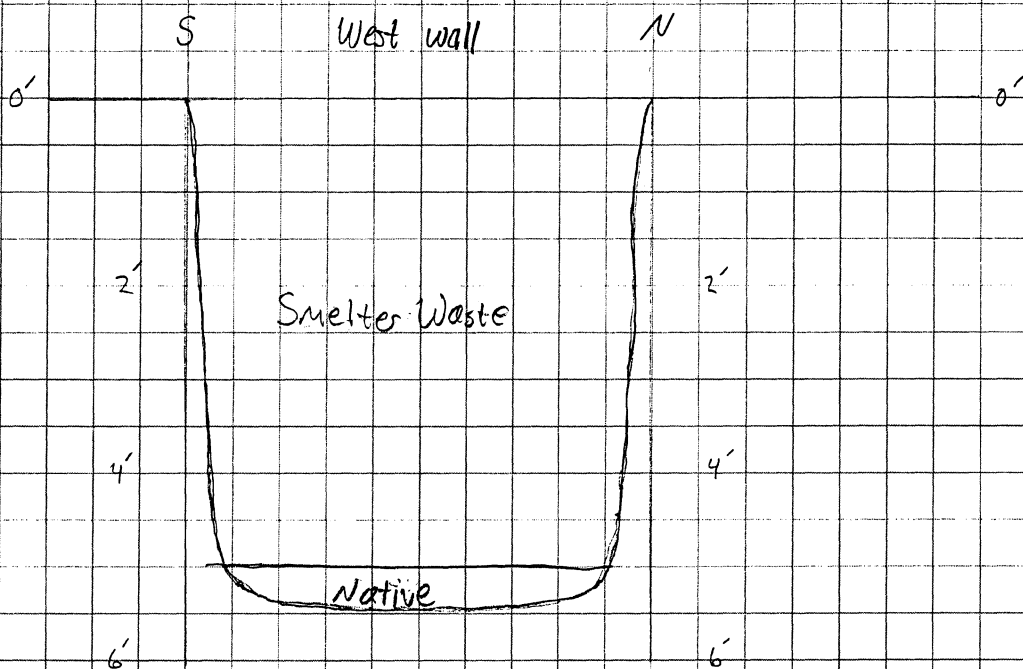
Checked By _____

TR-02

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-02 (5' x 3' x 5.5')



Smelter waste (0' - 5') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead in a silty matrix

Native zone (5' - 5.5') - CLAY, dark grayish brown 10YR 4/2 damp, medium plasticity, medium consistency



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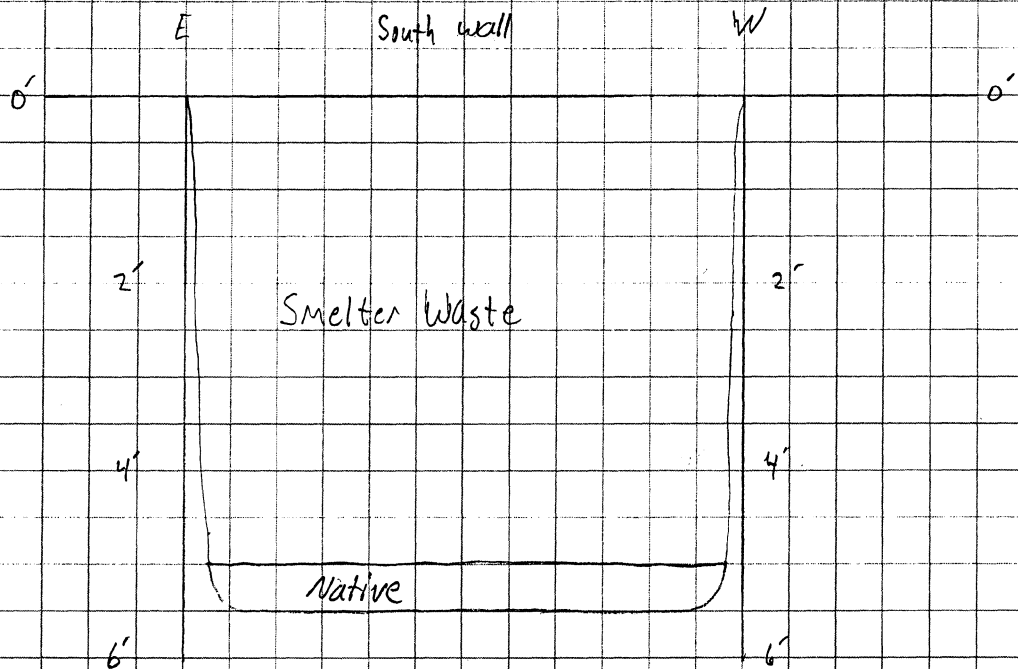
Checked By _____

TR-03

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-03 (6' x 3.5' x 5.5')



Smelter waste (0'-5') - unconsolidated, poorly sorted (fines to cobbles) -
crushed retorts, slag gravel consisting of retort
fragments, brick debris, coal, lead in a silty matrix

(5'-5.5') clay
Native zone - dark grayish brown 13PR 4/2, damp, medium plasticity, medium
consistency



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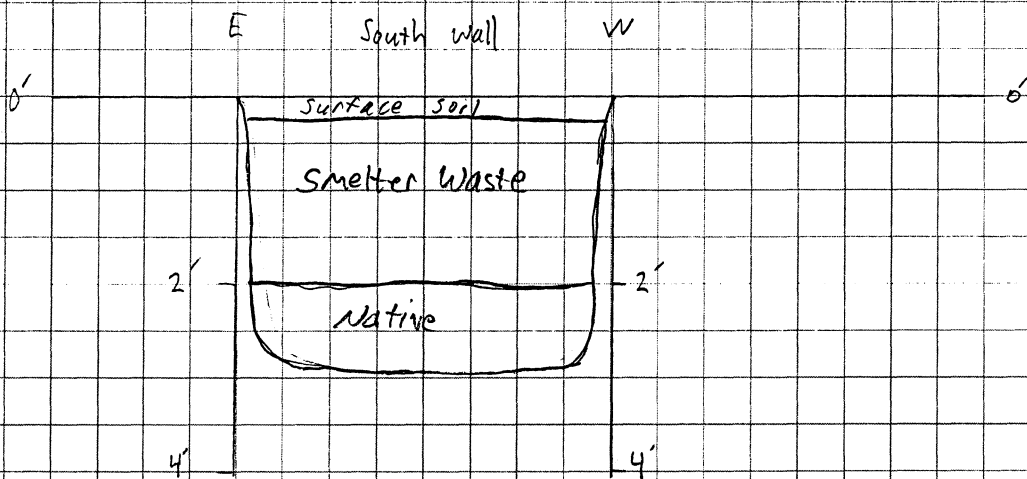
Checked By _____

TR-04

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-04 (4' x 3' x 3')



Surface soil (0'-0.25') - silt w/ slag gravel

Smelter waste - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, friable fragments of slag, slag gravel consisting of retort fragments, coal, lead, in a silty matrix
(0.25' - 2')

Native zone - CLAY, very dark gray 10YR 3/1 to black 10YR 2/1 dry + fine plasticity, medium to hard consistency
(2' - 3')



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Trenching Logs

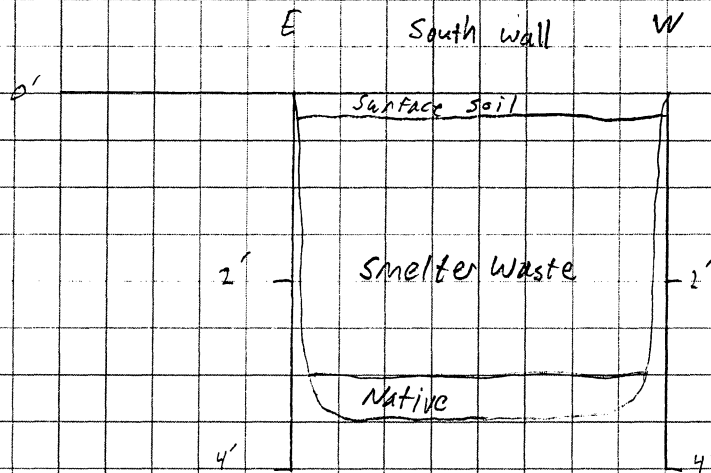
Checked By _____

TR-05

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-05 (4' x 3' x 3.5')



Surface soil (0'-0.25') - silt w/ slag gravel 10YR 3/2, roots

Smelter waste - UNCONSOLIDATED, poorly sorted (fines to cobbles) - broken retorts, (0.25' - 3') slag gravel consisting of retort fragments, brick debris, coal, in a silty matrix

Native zone - CLAY, yellowish brown 10YR 5/6, damp, medium plasticity, medium consistency (3' - 3.5')

Note: Very little visible surficial smelter waste



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Trenching Logs

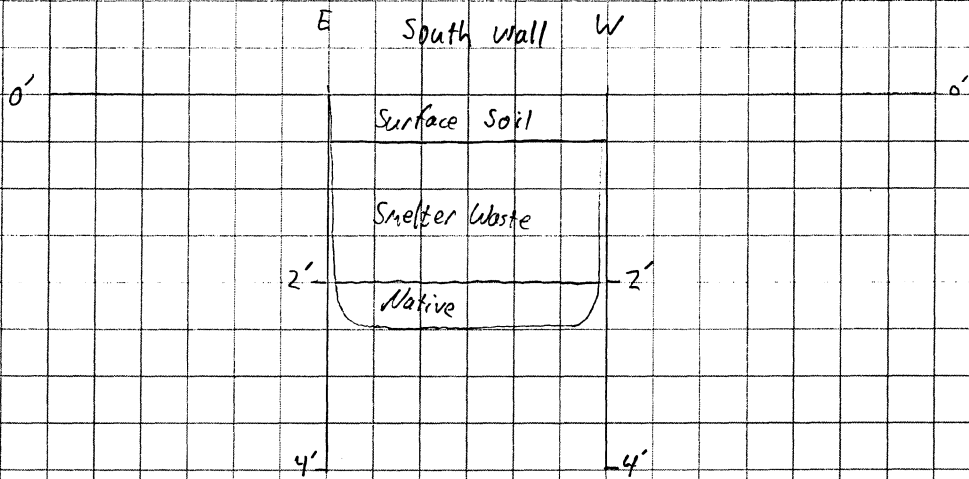
Checked By _____

TR-06

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-06 (3' x 3' x 2.5')



Surface soil - (0' - 0.5') - silt w/ slag gravel, trace clay

Smelter waste - (0.5' - 2') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, in a silty matrix

Native zone - (2' - 2.5') - CLAY, dark yellowish brown 10YR 4/6, damp, medium plasticity, medium consistency



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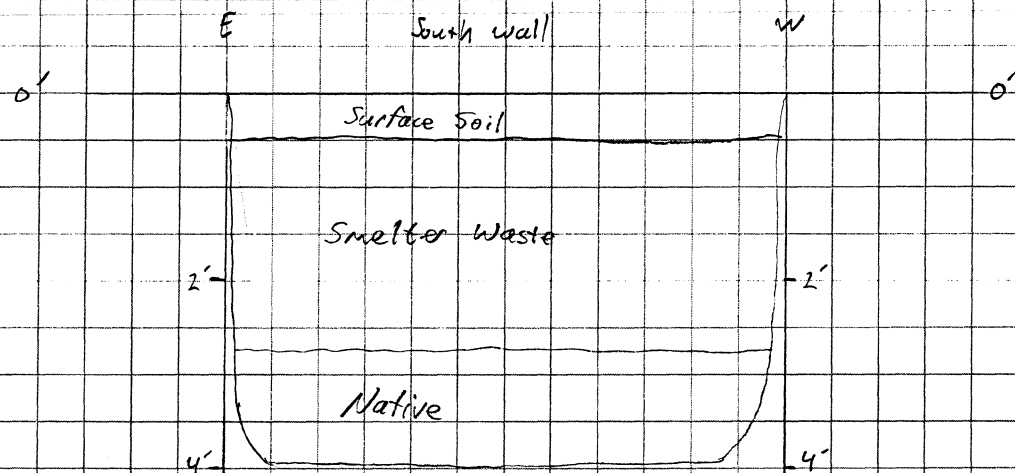
Checked By _____

TR-07

Preliminary _____ Final _____

1"=2' Horizontally & Vertically

TR-07 (6' x 4' x 4')



Surface soil - (0'-0.5') - clay w/slag gravel, molted, brick debris, concrete fragments

Smelter waste - (0.5'-2.75') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, bricks, concrete fragments, slag gravel consisting of retort fragments, brick debris, in a silty matrix

Native zone - (2.75'-4') - CLAY, brown 10YR 4/3, damp, medium plasticity, medium consistency



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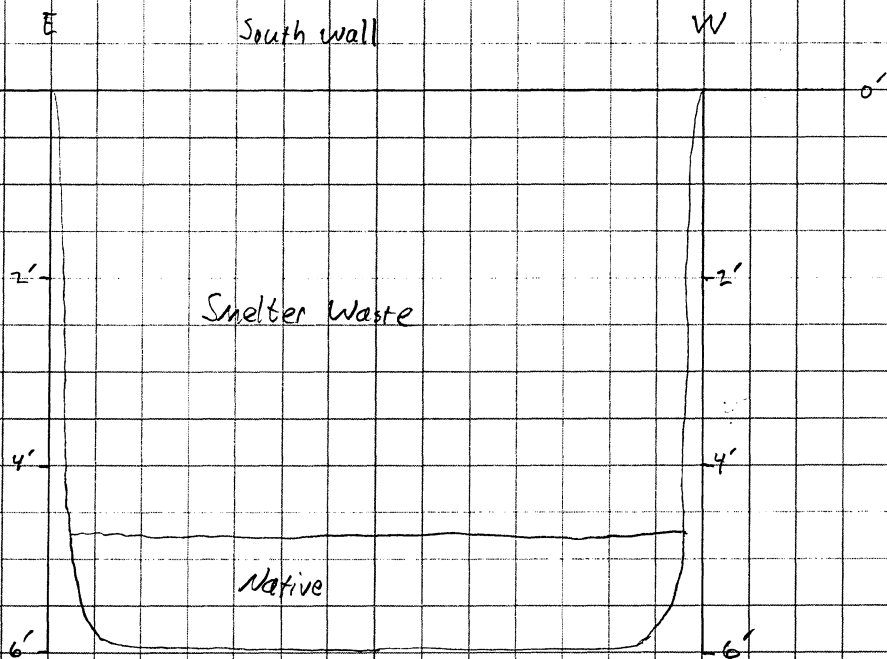
Checked By _____

TR-08

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-08 (7' x 4' x 6')



Smelter waste - (0' - 4.75') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead, in a silty matrix

Native zone - (4.75' - 6') - CLAY - dark grayish brown 10PR 4/2, damp, medium plasticity, medium consistency



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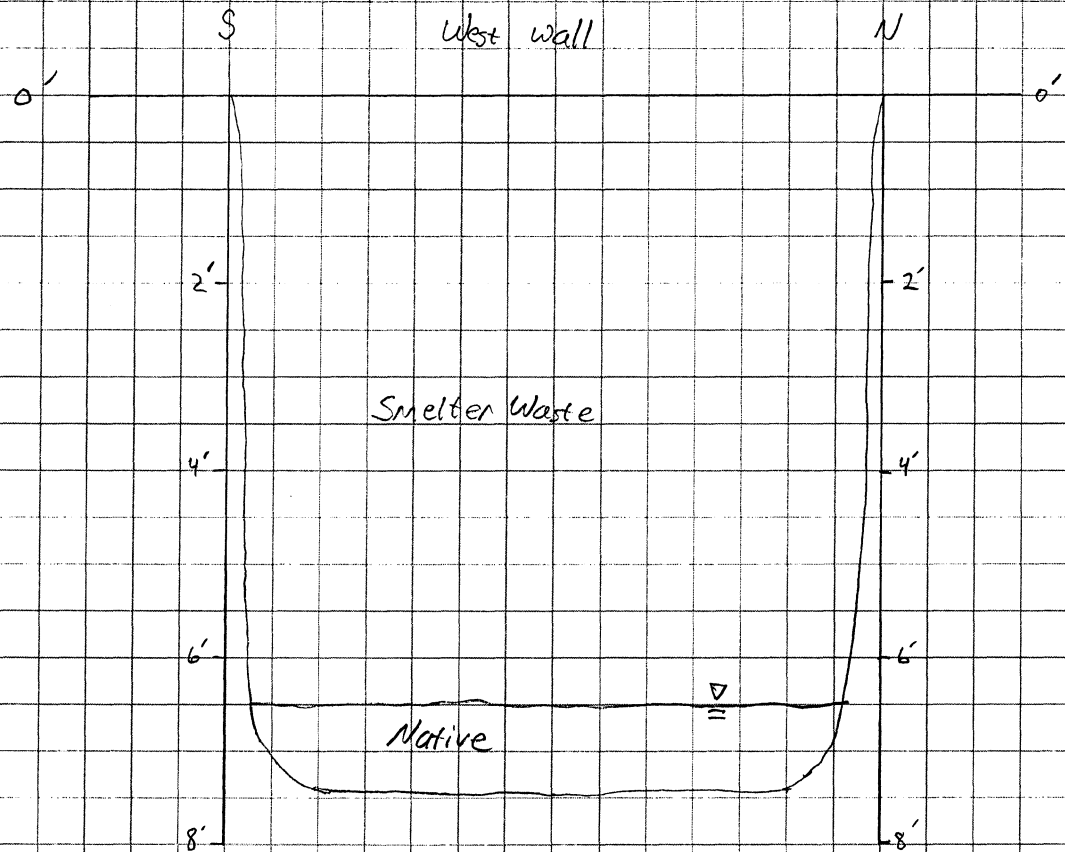
Checked By _____

TR-09

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-09 (7' x 3' 7.5')



Smelter waste (0'-6.5') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead, wood debris in a silty matrix

Native zone (6.5'-7.5') - CLAY, very dark gray 10YR 7/1 to black 10YR 7/1, moist to wet, high plasticity soft to medium consistency

Note: Water encountered at smelter waste/native interface (6.5 ft bgs)



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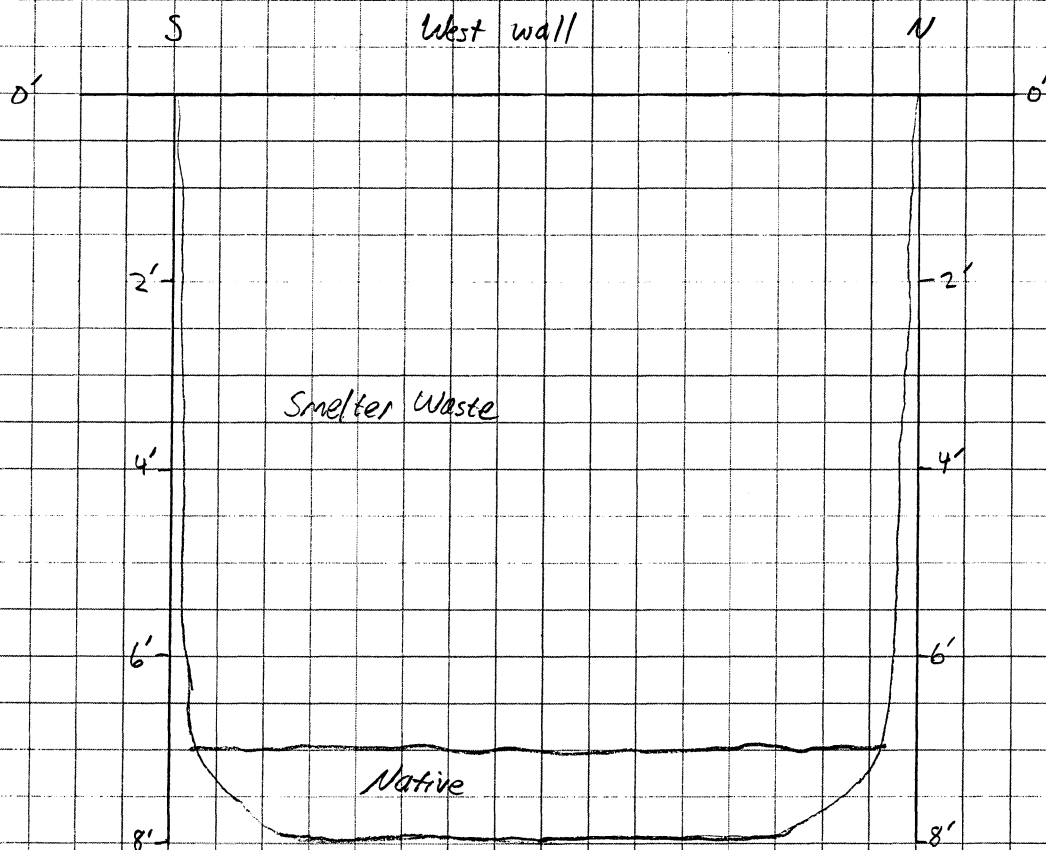
TR-10

Preliminary _____

Final _____

1" = 2' Horizontally & Vertically

TR-10 (8' x 4' x 8')



Smelter waste - (0'-7') - unconsolidated poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris in a silty matrix (0-1.5 ft bgs), in place cylindrical retorts (1.5-6 ft bgs), fine grained consolidated slag (from hot pour) (6-7 ft bgs)

Native zone - (7'-8') - CLAY. dark gray 10YR 4/1 to very dark gray 10YR 3/1, damp, medium plasticity, medium consistency, some small roots

Note: Tough trenching 6-7 ft bgs



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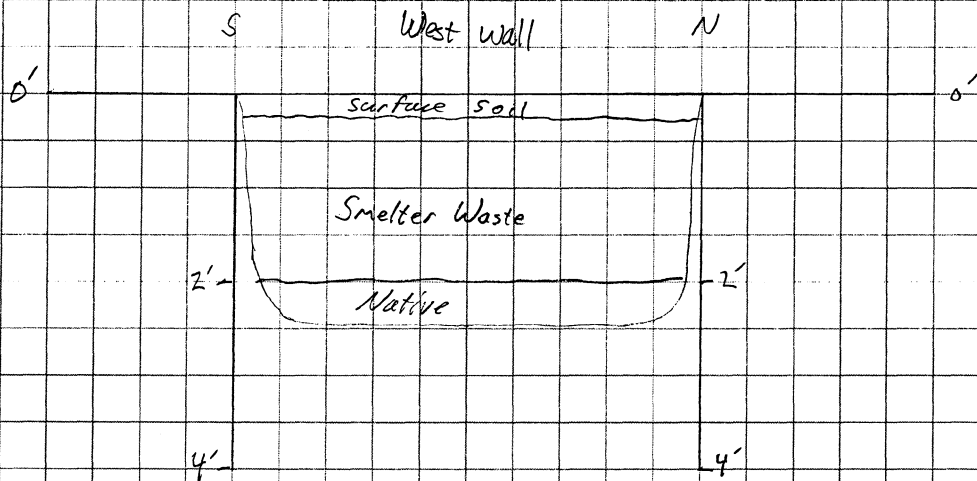
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TR-11

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-11 (5' x 3' x 2.5')



Surface soil - (0'-0.25') - silt w/ slag gravel, trace clay, roots present

Smelter waste - (0.25'-2') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, metal debris in a silty matrix

Native zone - (2'-2.5') - CLAY - dark yellowish brown 10 YR 4/4, damp, medium plasticity, medium consistency



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Trenching Logs

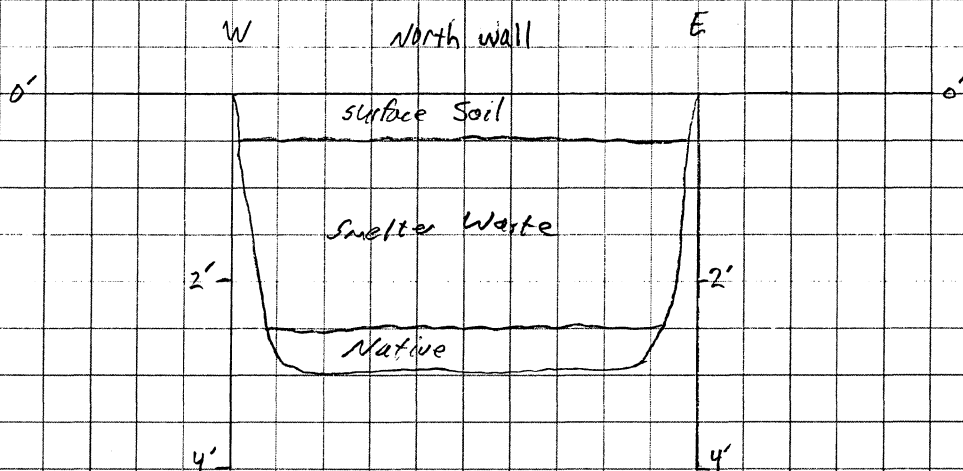
Checked By _____

TR-12

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-12 (5' x 2.5' x 3')



Surface soil (0'-0.5') - silt w/ slag gravel

Smelter waste (0.5'-2.5') - unconsolidated, poorly sorted (fines to cobbles) broken retorts, slag gravel consisting of retort fragments, brick debris, sticks in a silty matrix

Native zone (2.5'-3') - CLAY, dark yellowish brown 10YR 4/4, damp, medium plasticity, medium consistency



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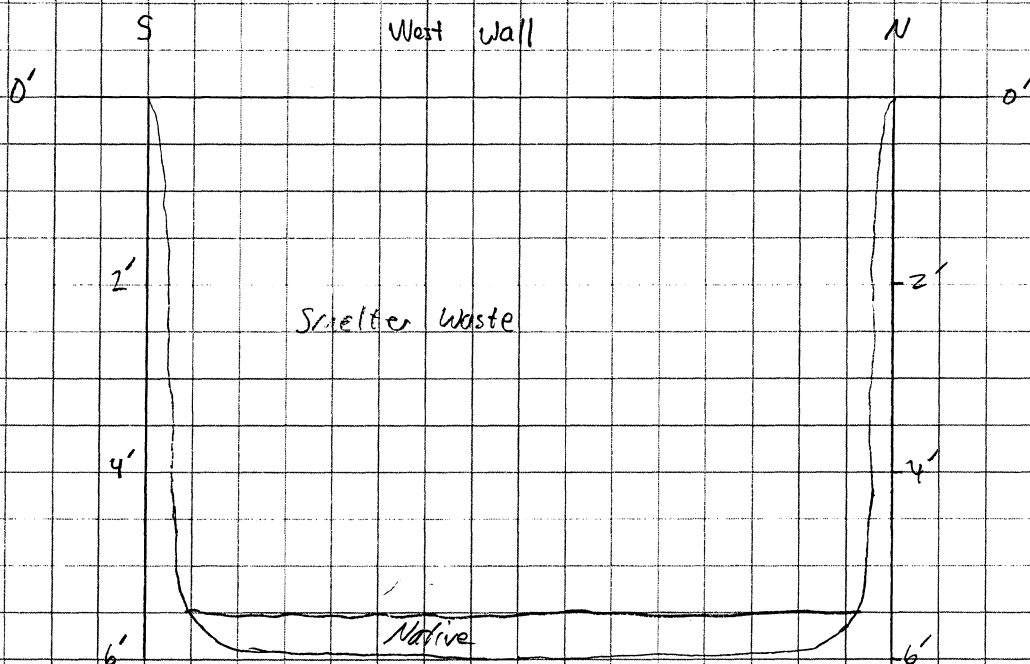
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TR-13

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-13 (8' x 3' x 6')



Smelter waste (0'-5.5') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris in a silty matrix (0-1 ft bgs), in place cylindrical retorts (1-3.5 ft bgs), fine grained consolidated slag (from hot pour) (3.5-5.5 ft bgs)

Native zone - (5.5'-6') - CLAY, very dark gray 10YR 3/1, damp, medium plasticity, medium consistency, some small roots

Note: Tough trenching 3.5-5.5 ft bgs



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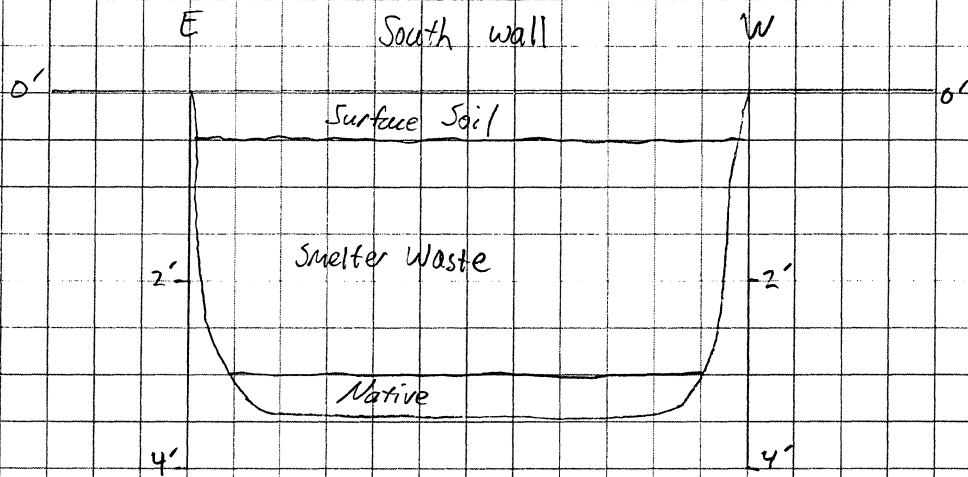
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TR-14

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-14 (6' x 2.5' x 3.5')



Surface soil - (0' - 0.5') - silt w/ slag gravel, sticks, roots

Smelter waste - (0.5' - 3') - unconsolidated poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris in a silty matrix

Native zone - (3' - 3.5') - CLAY, brown 10YR 4/3, damp, medium plasticity, medium consistency



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Trenching logs

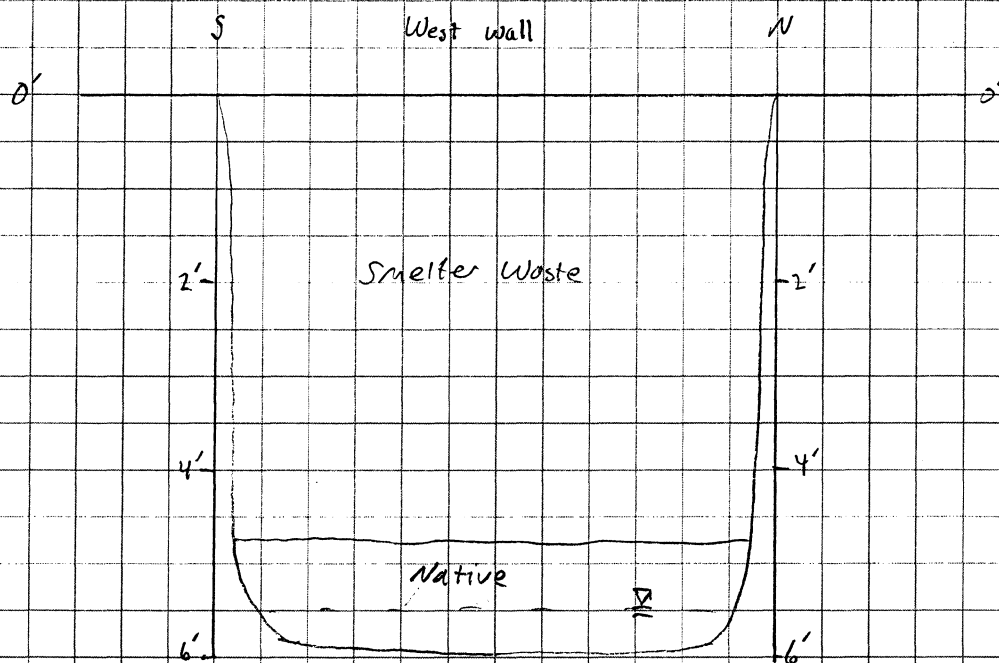
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TR-15

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-15 (6' x 4' x 6')



Smelter waste (0'-4.75') - unconsolidated poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments brick debris, coal/lead, wood debris in a silty matrix

Native zone (4.75'-6.0') - CLAY very dark gray 10% R_h, moist to wet, high plasticity, soft to medium consistency

Note - Water encountered at 5.5 ft bgs



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Trenching Logs

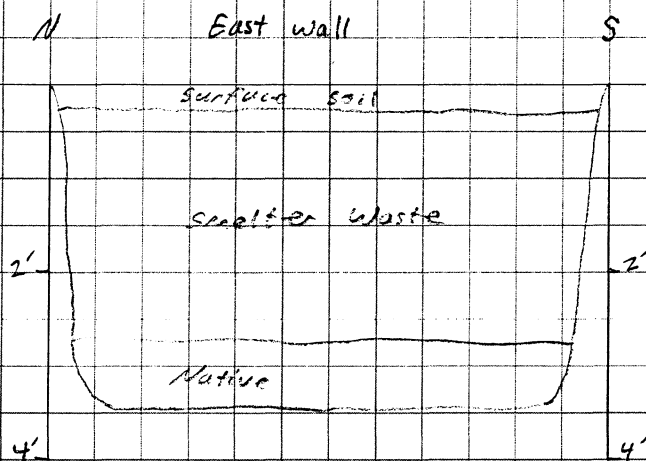
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TR-16

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-16 (6' x 2.5' x 3.5')



Surface soil - (0' - 0.25') - silt w/ slag gravel

Smelter waste - (0.25' - 2.75') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts, slag gravel consisting of retort fragments, brick debris, coal, lead in a silty matrix

Native zone - (2.75' - 3.5') - CLAY, yellowish brown 10YR 5/8 damp medium plasticity, medium consistency



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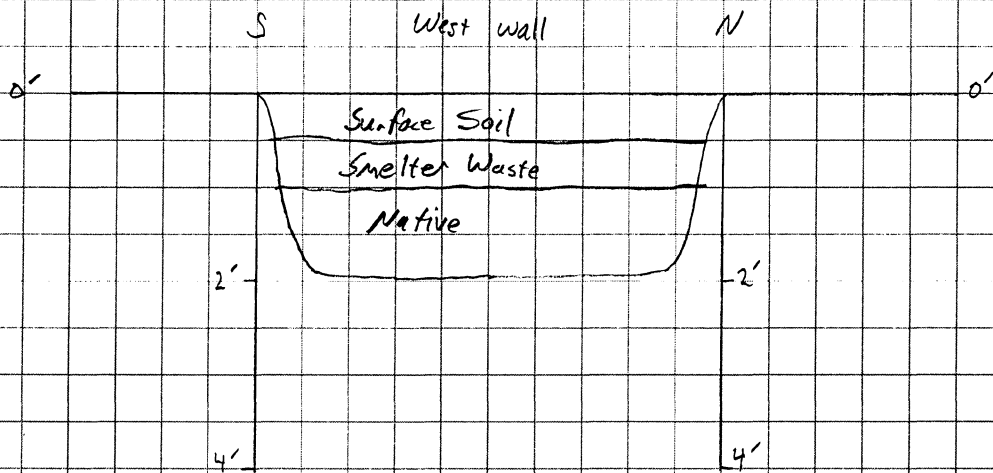
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TR-17

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-17 (5' x 2.5' x 2')



Surface soil - (0'-0.5') - silt w/ slag gravel, roots

Smelter waste - (0.5'-1') - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of retort fragments, coal, lead, in a silty matrix

Native zone - (1'-2') - CLAY - yellowish brown 10 PR 5% some sand, dump trace to medium plasticity, medium consistency

Note: Very little visible surficial smelter waste



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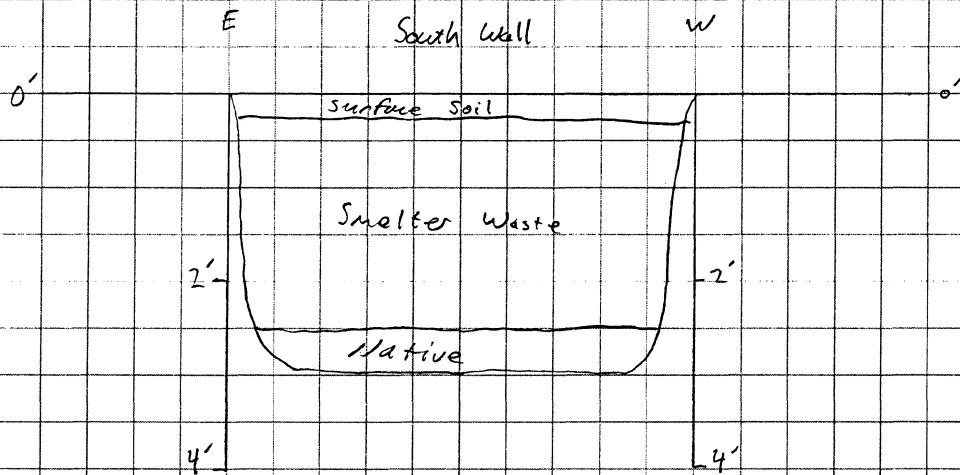
Checked By _____

TR-18

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-18 (5' x 2.5' x 3')



Surface soil - (0'-0.25') - silt w/ slag gravel

Smelter waste - (0.25'-2.5') - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of rebar fragments, coal, lead in a silty matrix

Native zone (2.5'-3') - CLAY, yellowish brown 10 YR 5/8, damp, medium plasticity, medium consistency

Note: Very little visible surficial smelter waste



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Trenching Logs

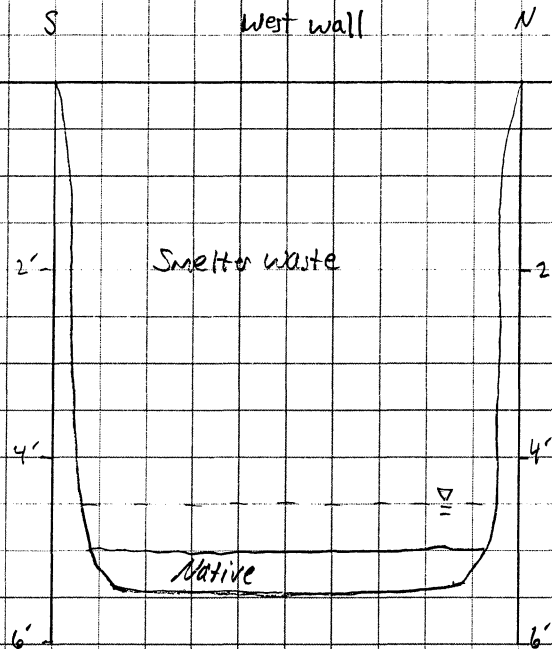
Checked By _____

7A-19

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-19 (5' x 3' x 5.5')



Smelter waste (0'-5') - unconsolidated, poorly sorted (fines to cobbles) - broken retorts
consolidated fragments of smelter waste, slag gravel consisting of
retort fragments, coal, lead, wood debris in a silty matrix

Native zone (5'-5.5') - CLAY, very dark gray 10YR 3/1, moist to wet, high
plasticity, soft to medium consistency

Note: Water encountered at 4.5 ft bgs



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Trenching Logs

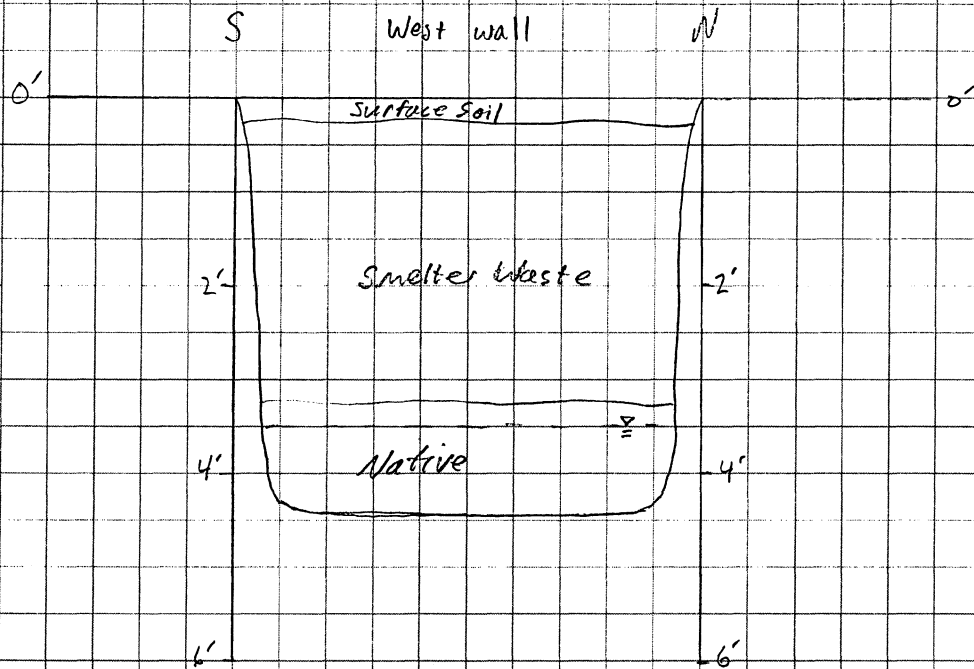
Checked By _____

TR-20

Preliminary _____ Final _____

1" = 2' Horizontally & Vertically

TR-20 (5' x 3' x 4.5')



Surface soil - (0'-0.25') - silt w/ slag gravel

Smelter waste - (0.25' - 3.25') - unconsolidated, poorly sorted (fines to cobbles) - retort fragments, friable fragments of smelter waste, slag gravel consisting of retort fragments, coal, lead, in a silty matrix

Native zone - (3.25' - 4.5') - CLAY - dark grayish brown 10 PR 1/2, moist to wet, high plasticity, soft to medium consistency

Note: Water encountered at 3.5 ft bgs



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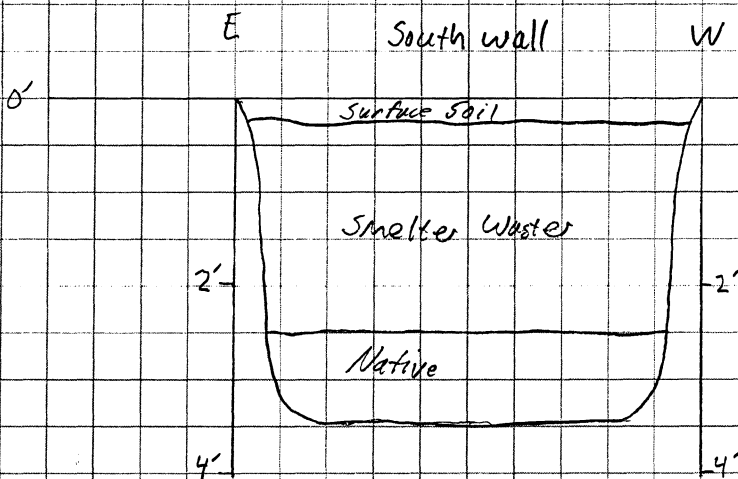
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TR-21

Preliminary _____ Final _____

1"=2' Horizontally & Vertically

TR-21 (5'x3'x3.5')



Surface soil - (0'-0.25') - silt w/ slag gravel, roots

Smelter waste - (0.25'-2.5') - slag - unconsolidated, poorly sorted (fines to cobbles) - friable fragments of smelter waste, slag gravel consisting of rebar fragments, coal, lead in a silty matrix

Native zone - (2.5'-3.5') - CLAY, brown 10YR 4/3 to dark grayish brown 10YR 4/2 damp, medium plasticity, medium consistency

Note: Very little visible surficial smelter waste

APPENDIX D
Off-Site Sampling Database of Properties and Addresses

Appendix D

Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
10730 E 138th Place N				
TSL-09	YES	Sec 30 T22N R14E		(b) (6)
1123 W Maple Street				
OSL-96 OSL-96A OSL-96C OSL-96D OSL-96E	YES	Sec 20 T22N R14E		(b) (6)
11321 E 126th Street N				
OSL-108	YES	Sec 32 T22N R14E		(b) (6)
OSL-109	YES	Sec 32 T22N R14E		(b) (6)
11714 E 130th Street N				
OSL-60	NO	Sec 32 T22N R14E	55310	(b) (6)
OSL-61	YES	Sec 32 T22N R14E	55310	(b) (6)
11727 E 136th Street N				
OSL-114	YES	Sec 29 T22N R14E	1140	(b) (6)
11922 E 140th Street N				
OSL-14	YES	Sec 29 T22N R14E		(b) (6)
12115 N 121st E Ave				
OSL-104	YES	Sec 5 T21N R14E		(b) (6)
12303 E 126th Street N				
OSL-111	YES	Sec 32 T22N R14E		(b) (6)
12505 N 113 E Ave				
OSL-107	YES	Sec 5 T21N R14E		(b) (6)
12526 N 113th E Ave				
OSL-106	YES	Sec 6 T21N R14E		(b) (6)
12817 E 120th Street N				
OSL-105	YES	Sec 5 T21N R14E		(b) (6)
13639 N 115th E Ave				
OSL-113	YES	Sec 29 T22N R14E		(b) (6)
Tulsa Co. Plat 7910 in Sec 31 T22N R14E				
OSL-54	YES	Sec 31 T22N R14E	7910	
OSL-55	YES	Sec 31 T22N R14E	7910	
10901 E 138th Pl N				
OSL-21	YES	Sec 30 T22N R14E	1440	(b) (6)
Cherokee Nation / ITEC				
TRB-11	YES	Sec 26 T22N R13E		
City Park				
OSL-04	YES	Sec 29 T22N R14E		
TSL-04	YES	Sec 29 T22N R14E		
11116 E 141st N				
OSL-08	YES	Sec 30 T22N R14E	1360	(b) (6)
11124 E 138th St N				
OSL-94	YES	Sec 30 T22N R14E		(b) (6)
OSL-94DW	YES	Sec 30 T22N R14E		(b) (6)
TRB-04	YES	Sec 30 T22N R14E		(b) (6)

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Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
Faith Assembly Church				
OSL-34	YES	Sec 32 T22N R14E	31935	(b) (6)
OSL-35	YES	Sec 32 T22N R14E	31935	(b) (6)
TSL-05 TSL-05A TSL-05B TSL-05C TSL-05D TSL-05E	YES	Sec 32 T22N R14E	31935	(b) (6)
13810 N 110 Ave E				
OSL-99	YES	Sec 30 T22N R14E		(b) (6)
1400 S 12th St				
TRB-09 TRB-09A TRB-09B TRB-09E	YES	Sec 29 T22N R14E	1280	(b) (6)
TRB-09DW	YES	Sec 29 T22N R14E	1280	(b) (6)
14015 N 109th E Ave				
OSL-07	YES	Sec 30 T22N R14E	1330	
12839 N 113th E Ave				
OSL-68	YES	Sec 32 T22N R14E	58010	(b) (6)
OSL-69	YES	Sec 32 T22N R14E	58010	(b) (6)
TRB-10 TRB-10A TRB-10B TRB-10C TRB-10D TRB-10E	YES	Sec 32 T22N R14E	58010	(b) (6)
High School				
OSL-01	YES	Sec 19 T22N R14E		(b) (6)
OSL-02	YES	Sec 19 T22N R14E		(b) (6)
13918 N 111th E Ave				
OSL-19	YES	Sec 30 T22N R14E	1390	(b) (6)
Tulsa Co. Plat 10910 in Sec 31 T22N R14E				
OSL-53	YES	Sec 31 T22N R14E	10910	
OSL-64	YES	Sec 31 T22N R14E	10910	
OSL-65	YES	Sec 31 T22N R14E	10910	
OSL-66	YES	Sec 31 T22N R14E	10910	
OSL-67	YES	Sec 31 T22N R14E	10910	
OSL-78	YES	Sec 31 T22N R14E	10910	
11727 E 136th St N				
TRB-08 TRB-08A TRB-08B TRB-08C TRB-08E	YES	Sec 29 T22N R14E	1140	(b) (6)

Appendix D

Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
Tulsa Co. Plat 25610 in Sec 32 T22N R14E				
OSL-33	YES	Sec 32 T22N R14E	25610	Directly S of (b) (6)
Middle School				
TSL-02	YES	Sec 29 T22N R14E	4210	
10710 E 136th Street N				
OSL-48	YES	Sec 31 T22N R14E	33580	(b) (6)
OSL-49	YES	Sec 31 T22N R14E	33580	(b) (6)
OSL-49A				
OSL-49B				
OSL-49C				
OSL-49D				
OSL-49DD				
OSL-49E				
OSL-49EE				
OSL-50	YES	Sec 31 T22N R14E	33580	(b) (6)
EC-01	YES	Sec 31 T22N R14E	33580	(b) (6)
BM	YES	Sec 31 T22N R14E	33580	(b) (6)
136th St N and 113th E Ave				
OSL-36	YES	Sec 31 T22N R14E	10	(b) (6)
OSL-36A				
OSL-36B				
OSL-36C				
OSL-36D				
OSL-36E				
OSL-36DW	YES	Sec 31 T22N R14E	10	(b) (6)
OSL-37	YES	Sec 31 T22N R14E	10	(b) (6)
OSL-38	YES	Sec 31 T22N R14E	10	(b) (6)
OSL-39	YES	Sec 31 T22N R14E	10	(b) (6)
OSL-39A				
OSL-39B				
OSL-39C				
OSL-39D				
OSL-39E				
TRB-01	YES	Sec 31 T22N R14E	3910	(b) (6)
FP-01	YES	Sec 31 T22N R14E	3910	(b) (6)
FP-02	YES	Sec 31 T22N R14E	3910	(b) (6)
FP-03	YES	Sec 31 T22N R14E	3910	(b) (6)
11707 E 130th St N				
OSL-59	YES	Sec 32 T22N R14E	55390	(b) (6)
Pioneer Park				
TSL-03	YES	Sec 29 T22N R14E		
10811 E 136th Pl N				
OSL-29	YES	Sec 30 T22N R14E	795	(b) (6)
Rural Fire Department				
OSL-27	YES	Sec 29 T22N R14E	1010	

Appendix D

Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
Right-of-Way / Ditches / Drainages of Old US 169 and Atchinson Topeka Santa Fe Railroad				
OSL-100	YES	Sec 32 T22N R14E		
OSL-101	YES	Sec 32 T22N R14E		
OSL-102	YES	Sec 32 T22N R14E		
OSL-103	YES	Sec 32 T22N R14E		
OSL-116	YES	Sec 32 T22N R14E		
OFF-01	YES	Sec 32 T22N R14E	65000	
OFF-02	YES	Sec 32 T22N R14E	65000	
OFF-03	YES	Sec 32 T22N R14E	65000	
OFF-04	YES	Sec 32 T22N R14E	65000	
OFF-10	YES	Sec 32 T22N R14E	65000	
OFF-16	YES	Sec 32 T22N R14E	65000	
OFF-17	YES	Sec 32 T22N R14E	65000	
OFF-18	YES	Sec 32 T22N R14E	65000	
OFF-19	YES	Sec 32 T22N R14E	65000	
10694 E 142nd PI N				
OSL-06	YES	Sec 30 T22N R14E	14900	(b) (6)
1421 W Walnut St				
OSL-97A OSL-97D	YES	Sec 20 T22N R14E	2110	(b) (6)
313 15th Street				
OSL-97B OSL-97C OSL-97E OSL-97F OSL-97G	YES	Sec 20 T22N R14E	2110	(b) (6)
11403 E 136th St N				
OSL-31	YES	Sec 29 T22N R14E	1690	(b) (6)
11414 E 140th PI N				
OSL-17	YES	Sec 29 T22N R14E	370	(b) (6)
11801 E 141st St N				
OSL-12 OSL-12A OSL-12B OSL-12C OSL-12D OSL-12E	YES	Sec 29 T22N R14E	165	(b) (6) (b) (6)
Tulsa County Plat 34010 in Sec. 32 T22N R14E (includes parts of the former Bartelsville Zinc Co)				
OSL-40 OSL-40A OSL-40B OSL-40C OSL-40CC OSL-40CCC OSL-40D OSL-40DD OSL-40E	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169

Appendix D

Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
Tulsa County Plat 34010 in Sec. 32 T22N R14E (includes parts of the former Bartelsville Zinc Co)				
OSL-41	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OSL-46	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OSL-47	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OSL-57	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OSL-58	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
TSL-06	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
TSL-07	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-05	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-06	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-07	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-08	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-09	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-11	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-12	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-13	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-14	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-15	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
OFF-20	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
MW-6	YES	Sec 32 T22N R14E	34010	50-Acres north of the cement plant on the side of Old Hwy 169
Tulsa Co. Plat 28910 in Sec. 32 T22N R14E, not on-site South of Strip Mine Pit				
OSL-56	YES	Sec 32 T22N R14E	28910	
OSL-63	YES	Sec 32 T22N R14E	28910	
10110 126th St				
OSL-98	YES	Sec 6 T21N R14E		(b) (6)
10573 E 142nd St N				
OSL-95	YES	Sec 30 T22N R14E		(b) (6)
12800 N 118th E Ave				
OSL-73	YES	Sec 32 T22N R14E	54710	Beg 836N SWC SE SW TH N313 E418 S313 W418 POB Less E25 for RD Sec 32 22 14 2.82 ACS, Unplatted
Water Tower				
OSL-03	YES	Sec 20 T22N R14E		

Appendix D

Off-Site Sampling Database of Properties and Addresses

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sampled	Map	Tulsa County Plat ID	Access Address
Wilson Elementary School				
TSL-01	YES	Sec 20 T22N R14E		(b) (6)
13915 N 117th E Ave				
OSL-25	YES	Sec 29 T22N R14E		(b) (6)
Background Sampling Location - 12440 N 97th E Ave				
BG-OSL-01	YES	Sec 01 T21N R13E	4810	(b) (6)
Background Sampling Location - City Lake				
BG-OSL-02	YES	Sec 22 T22N R14E		
BG-OFF-02	YES	Sec 22 T22N R14E		
Background Sampling Location - 14111 E 122nd St N				
BG-OSL-03	YES	Sec04 T21N R14E		(b) (6)
BG-SP-03	YES	Sec04 T21N R14E		(b) (6)
Background Sampling Location - 12807 E 116th St N				
BG-OSL-04	YES	Sec 5 T21N R14E		(b) (6)
BG-SP-04	YES	Sec 5 T21N R14E		(b) (6)
Background Sampling Location - 13710 N 150th E Ave				
BG-OSL-05	YES	Do Not Have Plat Map		(b) (6)
Background Sampling Location - 8404 E 136th Street N				
BG-OSL-06	YES	Sec 36 T22N R13E		(b) (6)
Background Sampling Location - 10805 E 156th Street N				
BG-OSL-07	YES	Do Not Have Plat Map		(b) (6)
Background Sampling Location - 13908 N 86th E Ave				
BG-OFF-01	YES	Sec 25 T22N R13E		(b) (6)
Background Sampling Location - 14405 E 126th Street N				
BG-SP-01	YES	Sec 30 T22N R14E		(b) (6)
Background Sampling Location - 13925 N 97th E Ave				
BG-SP-02	YES	Sec 33 T22N R14E		(b) (6)
Background Sampling Location - 10111 E 120th Street N				
BG-SP-05	YES	Sec 6 T21N R14E		(b) (6)
Background Sampling Location - 13413 N 91st E Ave Property				
BG-SP-06	YES	Sec 36 T22N R13E		(b) (6)
Background Sampling Location - 13628 N 97th E Ave Property				
BG-SP-07	YES	Sec 36 T22N R13E		(b) (6)
Unsampled Properties				
OSL-09	NO	Sec 30 T22N R14E		
OSL-70	NO	Sec 32 T22N R14E	53510	
OSL-84	NO	Sec 32 T22N R14E	63910	(b) (6)

APPENDIX E
Surface Water Field Parameters

Surface Water Field Parameters

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Date Collected	Parameters			
			Temperature (°C)	pH (standard units)	Specific Conductivity (umhos/cm)	Turbidity (NTUs)
Background Surface Water Samples						
BG-OFF-01	SW01	9/29/2005	19.7	8.3	400	NM
BG-OFF-02	SW01	9/13/2005	NM	NM	NM	NM
FP-01	SW01	9/20/2006	21.4	8.5	300	NM
FP-02	SW01	9/20/2006	24.6	8.8	300	NM
FP-03	SW01	9/20/2006	25.9	8.9	300	NM
On-Site Surface Water Samples						
CST-01	SW01	5/10/2006	17.1	7.4	600	NM
PD1-01	SW01	7/20/2005	26.7	7.6	300	NM
PD1-02	SW01	7/20/2005	27.7	7.7	300	NM
PD1-02A	SW01	9/13/2005	NM	NM	NM	NM
PD1-02	SW02	5/10/2006	17.5	7.6	320	NM
PD1-03	SW01	7/20/2005	28.1	7.9	300	NM
PD2-01	SW01	7/20/2005	27.0	7.6	600	NM
PD2-02	SW01	7/20/2005	27.8	7.6	600	NM
PD3-01	SW01	7/20/2005	29.5	7.8	800	NM
PD3-02	SW01	7/20/2005	29.5	7.8	400	NM
PD4-01	SW02	5/10/2006	18.0	7.1	260	NM
PD5-01	SW02	5/10/2006	19.0	6.7	160	NM
MSR-01	SW02	5/8/2006	22.6	7.3	280	NM
MSR-02	SW02	5/8/2006	22.8	7.0	300	NM
MSR-03	SW02	5/8/2006	22.1	6.4	480	NM
SMP-01	SW01	7/19/2005	32.7	7.7	1700	NM
SMP-02	SW01	7/19/2005	31.8	7.8	1700	NM
SMP-03	SW01	7/19/2005	32.4	7.7	1700	NM
SMP-04	SW01	7/19/2005	31.6	7.7	1700	NM
SMP-05	SW01	7/19/2005	31.8	7.7	1800	NM
SMP-06	SW01	7/19/2005	32.0	7.8	1700	NM
Off-Site Surface Water Samples						
OFF-01	SW02	5/10/2006	17.1	7.0	560	NM
OFF-02	SW01	7/20/2005	26.6	7.6	1000	NM
OFF-02	SW02	5/10/2006	17.9	7.2	600	NM
OFF-03	SW02	5/10/2006	17.3	7.1	1100	NM
OFF-04	SW01	7/20/2005	27.2	7.6	1000	NM
OFF-04	SW02	5/10/2006	17.3	7.2	750	NM
OFF-05	SW02	5/10/2006	18.9	7.4	600	NM
OFF-06	SW02	5/10/2006	18.0	7.0	500	NM
OFF-07	SW02	5/10/2006	18.9	7.2	650	NM
OFF-08	SW02	5/10/2006	18.6	7.1	650	NM
OFF-09	SW01	7/21/2005	26.0	6.8	600	NM
OFF-09	SW02	5/9/2006	21.9	7.1	600	NM
OFF-10	SW02	5/9/2006	24.9	7.1	200	NM
OFF-11	SW02	5/10/2006	17.8	7.8	1060	NM
OFF-12	SW02	5/10/2006	18.2	6.8	1000	NM
OFF-13	SW02	5/10/2006	17.4	6.6	1100	NM
OFF-14	SW01	5/9/2006	28.1	6.9	230	NM
OFF-15	SW01	5/9/2006	21.9	6.9	1400	NM
OFF-16	SW01	5/9/2006	24.1	7.3	200	NM

Surface Water Field Parameters

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Date Collected	Parameters			
			Temperature (°C)	pH (standard units)	Specific Conductivity (umhos/cm)	Turbidity (NTUs)
Off-Site Surface Water Samples						
OFF-17	SW01	5/9/2006	24.6	7.3	100	NM
OFF-18	SW01	5/9/2006	25.4	7.3	500	NM
OFF-19	SW01	5/9/2006	23.8	7.3	200	NM
OFF-20	SW01	5/9/2006	21.9	7.3	200	NM

Notes:

°C = Degrees Celcius

NM = not measured

NTUs = Nephelometric Turbidity Units

APPENDIX F
Monitoring Well Information

APPENDIX F-1

Monitoring Well Construction Diagrams

Well Construction Details

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Well Number	Ground Elevation	Top of Casing Elevation	Length of 2 in. Diameter PVC Casing (ft)	Screened Interval, including end cap (ft bTOC)	Filter Pack (10/20 Sand) Interval (ft bTOC)	Bentonite Seal Interval (ft bTOC)	Annular Seal Interval (ft bTOC)	Total Well Depth Installed (bgs)	Total Boring Depth (bgs)
MW-1	674.30	677.30	9.46	14.7 - 9.46	14.7 - 6.83	6.83 - 4.00	4.00 - 3.00	11.7	11.7
MW-2	652.27	655.35	10.91	16.08 - 10.91	16.08 - 8.78	8.78 - 4.08	4.08 - 3.08	13.0	13.0
MW-3	649.90	653.16	10.34	15.26 - 10.34	15.26 - 8.26	8.26 - 4.26	4.26 - 3.26	12.0	12.0
MW-4	648.29	651.29	8.3	13.3 - 8.3	13.3 - 6.0	6.0 - 4.00	4.00 - 3.00	10.3	10.3
MW-4D	649.00	651.81	32.01	54.01 - 32.01	32.01 - 30.01	30.01 - 22.01	22.01 - 4.81	51.2	51.2
MW-5	651.88	655.01	8.34	13.33 - 8.34	13.33 - 6.13	6.13 - 4.13	4.13 - 3.13	10.2	10.2
MW-6	645.60	648.25	6.3	11.3 - 6.3	11.3 - 5.3	5.3 - 3.3	3.3 - 2.65	8.65	8.65

Notes:

bgs = below ground surface
bTOC = below top of casing
ft = feet
in. = inches

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 674.30 FT

TOP OF CASING (T.O.C.)
ELEVATION 677.30 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 9.46 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

1.0 FT
CONCRETE
ANNULAR SEAL

2.83 FT
BENTONITE SEAL
MEDIUM CHIPS

▼ 10.53 FT FROM T.O.C.
WATER LEVEL
MEASURED 10/04/05

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

LENGTH OF
SCREEN
+
END CAP 5.24 FT

7.87 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 9/14/05 to 9/19/05

BOTTOM OF
WELL 11.7 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-1
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 652.27 FT

TOP OF CASING (T.O.C.)
ELEVATION 655.35 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 10.91 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

1.0 FT
CONCRETE
ANNULAR SEAL

4.70 FT
BENTONITE SEAL
MEDIUM CHIPS

▼ 14.28 FT FROM T.O.C.
WATER LEVEL
MEASURED 10/04/05

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

LENGTH OF
SCREEN
+
END CAP
5.17 FT

7.30 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 9/16/05 to 9/19/05

BOTTOM OF
WELL 13.0 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-2
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 649.90 FT

TOP OF CASING (T.O.C.)
ELEVATION 653.16 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 10.34 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

1.0 FT
CONCRETE
ANNULAR SEAL

4.00 FT
BENTONITE SEAL
MEDIUM CHIPS

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

LENGTH OF
SCREEN
+
END CAP
4.92 FT

▼ 8.21 FT FROM T.O.C.
WATER LEVEL
MEASURED 10/04/05

7.00 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 9/16/05 to 9/19/05

BOTTOM OF
WELL 12.0 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-3
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 648.29 FT

TOP OF CASING (T.O.C.)
ELEVATION 651.29 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 8.3 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

1.0 FT
CONCRETE
ANNULAR SEAL

2.0 FT
BENTONITE SEAL
MEDIUM CHIPS

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

LENGTH OF
SCREEN
+
END CAP
5.0 FT

▼ 5.24 FT FROM T.O.C.
WATER LEVEL
MEASURED 10/04/05

7.3 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 9/16/05 to 9/19/05

BOTTOM OF
WELL 10.3 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-4
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 649.00 FT

TOP OF CASING (T.O.C.)
ELEVATION 651.81 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 32.01 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

19.2 FT
CONCRETE
ANNULAR SEAL

8.0 FT
BENTONITE SEAL
MEDIUM CHIPS

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

▼ 13.32 FT FROM T.O.C.
WATER LEVEL
MEASURED 9/18/06

LENGTH OF
SCREEN
+
END CAP
22.0 FT

24.0 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 8/15/06 to 8/30/06

BOTTOM OF
WELL 51.2 FT
BELOW GRADE

NOT TO SCALE



MONITORING WELL MW-4D
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 651.88 FT

TOP OF CASING (T.O.C.)
ELEVATION 655.01 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

PVC CASING 8.34 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

1.0 FT
CONCRETE
ANNULAR SEAL

2.00 FT
BENTONITE SEAL
MEDIUM CHIPS

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

LENGTH OF
SCREEN
+
END CAP
4.99 FT

▼ 11.24 FT FROM T.O.C.
WATER LEVEL
MEASURED 10/04/05

7.20 FT
FILTERSIL
10/20 FILTER SAND

DATE INSTALLED 9/16/05 to 9/19/05

BOTTOM OF
WELL 10.2 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-5
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

ABOVEGROUND LOCKING
STEEL PROTECTIVE COVER

LAND SURFACE
ELEVATION 645.60 FT

TOP OF CASING (T.O.C.)
ELEVATION 648.25 FT

WATERTIGHT CAP

3 FT X 3 FT X 0.5 FT
CONCRETE WELL PAD

0.65 FT
CONCRETE
ANNULAR SEAL

PVC CASING 6.30 FT

2.0 IN. DIA. PVC
CASING WITH FLUSH
THREADED COUPLINGS

2.00 FT
BENTONITE SEAL
MEDIUM CHIPS

▼ 7.76 FT FROM T.O.C.
WATER LEVEL
MEASURED 9/18/06

NO. 10 - SLOT
SCREEN (0.010-
INCH OPENINGS)

6.00 FT
FILTERSIL
10/20 FILTER SAND

LENGTH OF
SCREEN
+
END CAP
5.00 FT

DATE INSTALLED 8/15/06 to 8/18/06

BOTTOM OF
WELL 8.65 FT
BELOW GRADE

NOT TO SCALE

Burns &
McDonnell
SINCE 1898

MONITORING WELL MW-6
CONSTRUCTION DIAGRAM
TULSA FUEL &
MANUFACTURING
COLLINSVILLE, OKLAHOMA

APPENDIX F-2

Monitoring Well Development Forms

Well Development Form

Project Number: 26478				Well Number: MW-1						
Project Information				Elevation of Well						
Facility Name: TFM				Ground Surface Elevation (GS):						
Location: N E				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: 09/14/05				$(4.76)(.0408)(2)^2 = 0.776 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: 14.79 feet from top of casing										
Depth to Top of Screen: 6.5 feet from ground surface										
Length of Casing Screened: 5 feet										
Type of Formation Screened: clay/shale										
Well Development Method										
Equipment:				Method Description:						
Surge	X	Bail	X							
Airlift		Pump								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (g/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
09/27/05	1320	10.02	14.78	0.05	0.05	22.0	7.5	800	52.8	clear
	1349	10.05	14.78	0.05	0.1	23.1	7.4	800	71000	
	1356	11.48	14.78	0.8	0.9	22.5	7.4	800	71000	
	1402	12.19	14.79	0.8	1.7	23.0	7.4	800	71000	
	1407	13.00	14.79	0.8	2.5	22.0	7.4	800	71000	
	1412	13.65	14.79	0.8	3.3	21.6	7.4	800	617	
	1418	dry	14.79	0.3	3.6	21.9	7.4	800	366	cloudy

* From TOC unless otherwise noted in Remarks



TFM-0001813

Page 1 of 1

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SINCE 1898

Well Development Form

Page 1 of 1

Project Number: 36478				Well Number: TFM MW-1						
Project Information				Elevation of Well						
Facility Name: TFM				Ground Surface Elevation (GS):						
Location: N E				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: 09/14/05				$(1.02 \times .0408)(2)^2 = 0.166 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: 14.79		feet from top of casing								
Depth to Top of Screen: 6.5		feet from ground surface								
Length of Casing Screened: 5		feet								
Type of Formation Screened: clay/shale										
Well Development Method										
Equipment:				Method Description:						
Surge X		Bail X								
Airlift		Pump								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
09/26/05	1346	13.78	14.80	0.05	0.05	23.1	7.4	800	172	
1	1406	14.15	14.80	0.05	0.10	23.6	7.4	800	2100	
	1413	dry	14.80	0.15	0.25	25.8	7.5	800	683	

* From TOC unless otherwise noted in Remarks



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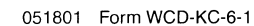
* From TOC unless otherwise noted in Remarks



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* From TOC unless otherwise noted in Remarks



TFM-0001818

Well Development Form

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Project Number: <u>36478</u>				Well Number: <u>MW-3</u>						
Project Information				Elevation of Well						
Facility Name: <u>TFM</u>				Ground Surface Elevation (GS):						
Location: <u>N</u> <u>E</u>				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: <u>09/16/05</u>				$(7.06 \times 0.0408 \times 2)^2 = 1.152 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: <u>15.53</u> feet from <u>top of casing</u>										
Depth to Top of Screen: <u>7.08</u> feet from <u>ground surface</u>										
Length of Casing Screened: <u>5</u> feet										
Type of Formation Screened: <u>clay/shale</u>										
Well Development Method										
Equipment:				Method Description:						
Surge <input checked="" type="checkbox"/>		Bail <input checked="" type="checkbox"/>								
Airlift		Pump								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (g/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>09/27/05</u>	<u>1505</u>	<u>8.48</u>	<u>15.54</u>	<u>0.1</u>	<u>0.1</u>	<u>24.4</u>	<u>7.4</u>	<u>1600</u>	<u>38.0</u>	<u>clear</u>
	<u>1531</u>	<u>8.56</u>	<u>15.53</u>	<u>0.1</u>	<u>0.2</u>	<u>24.6</u>	<u>7.4</u>	<u>1600</u>	<u>>1000</u>	
	<u>1540</u>	<u>10.83</u>	<u>15.52</u>	<u>1.2</u>	<u>1.4</u>	<u>24.9</u>	<u>7.6</u>	<u>1600</u>	<u>>1000</u>	
	<u>1545</u>	<u>11.68</u>	<u>15.52</u>	<u>1.2</u>	<u>2.6</u>	<u>24.6</u>	<u>7.6</u>	<u>1700</u>	<u>>1000</u>	
	<u>1551</u>	<u>12.88</u>	<u>15.53</u>	<u>1.2</u>	<u>3.8</u>	<u>24.2</u>	<u>7.6</u>	<u>1600</u>	<u>>1000</u>	
	<u>1600</u>	<u>14.57</u>	<u>15.53</u>	<u>1.2</u>	<u>5.0</u>	<u>24.1</u>	<u>7.7</u>	<u>1700</u>	<u>>1000</u>	
	<u>1604</u>	<u>dry</u>	<u>15.52</u>	<u>0.5</u>	<u>5.5</u>	<u>23.7</u>	<u>7.8</u>	<u>1700</u>	<u>>1000</u>	

* From TOC unless otherwise noted in Remarks



TFM-0001819

Well Development Form

Page 1 of 1

Project Number: 36478				Well Number: MW-3						
Project Information				Elevation of Well						
Facility Name: TFM				Ground Surface Elevation (GS):						
Location: N E				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: 09/16/05				$(6.98 \times 0.0408 \times 2)^2 = 1.140 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: 15.53		feet from top of casing								
Depth to Top of Screen: 7.08		feet from ground surface								
Length of Casing Screened: 5		feet								
Type of Formation Screened: clay/shale										
Well Development Method										
Equipment:				Method Description:						
Surge X		Bail X								
Airlift		Pump								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (g/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
09/28/05	1045	8.55	15.53	0.05	0.05	24.1	7.4	1900	172	
	1113	8.60	15.52	0.05	0.10	24.4	7.5	1800	21000	
	1123	10.85	15.52	1.15	1.25	24.3	7.5	1800	21000	
	1129	12.08	15.52	1.15	2.40	24.1	7.4	1700	21000	
	1138	12.24	15.52	1.15	3.55	23.8	7.5	1800	21000	
	1143	14.73	15.52	1.15	4.70	23.0	7.4	1800	21000	
	1152	dry	15.52	0.55	5.25	23.2	7.5	1800	21000	

* From TOC unless otherwise noted in Remarks


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TFM-0001820

Well Development Form

[illegible]

* From TOC unless otherwise noted in Remarks



TFM-0001821

Well Development Form

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Project Number: <u>36478</u>				Well Number: <u>MW-4</u>						
Project Information				Elevation of Well						
Facility Name: <u>TFM</u>				Ground Surface Elevation (GS):						
Location: <u>N</u> <u>E</u>				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: <u>09/16/05</u>				$(7.66)(0.0408)(2)^2 = 1.250 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: <u>13.21</u> feet from <u>top of casing</u>										
Depth to Top of Screen: <u>5.7</u> feet from <u>ground surface</u>										
Length of Casing Screened: _____ feet										
Type of Formation Screened:										
Well Development Method										
Equipment:				Method Description:						
Surge <u>X</u>		Bail <u>X</u>								
Airlift		Pump								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>09/27/05</u>										
	<u>1624</u>	<u>9.55</u>	<u>13.21</u>	<u>0.1</u>	<u>0.1</u>	<u>23.1</u>	<u>7.1</u>	<u>1200</u>	<u>159</u>	
	<u>1645</u>	<u>9.55</u>	<u>13.21</u>	<u>0.1</u>	<u>0.2</u>	<u>23.6</u>	<u>7.2</u>	<u>1300</u>	<u>>1000</u>	
	<u>1652</u>	<u>6.28</u>	<u>13.21</u>	<u>1.25</u>	<u>1.45</u>	<u>23.7</u>	<u>7.1</u>	<u>1300</u>	<u>>1000</u>	
	<u>1656</u>	<u>6.85</u>	<u>13.20</u>	<u>1.25</u>	<u>2.70</u>	<u>24.6</u>	<u>7.1</u>	<u>1200</u>	<u>>1000</u>	
	<u>1701</u>	<u>7.35</u>	<u>13.20</u>	<u>1.25</u>	<u>3.95</u>	<u>24.8</u>	<u>7.0</u>	<u>1200</u>	<u>>1000</u>	
	<u>1707</u>	<u>7.71</u>	<u>13.18</u>	<u>1.25</u>	<u>5.20</u>	<u>24.5</u>	<u>7.0</u>	<u>1200</u>	<u>>1000</u>	
	<u>1712</u>	<u>7.40</u>	<u>13.18</u>	<u>1.25</u>	<u>6.45</u>	<u>24.6</u>	<u>7.0</u>	<u>1200</u>	<u>>1000</u>	
	<u>1716</u>	<u>7.00</u>	<u>13.18</u>	<u>1.25</u>	<u>7.70</u>	<u>24.7</u>	<u>7.1</u>	<u>1200</u>	<u>>1000</u>	
	<u>1723</u>	<u>7.45</u>	<u>13.18</u>	<u>1.25</u>	<u>9.95</u>	<u>24.9</u>	<u>6.9</u>	<u>1200</u>	<u>743</u>	
	<u>1729</u>	<u>7.30</u>	<u>13.18</u>	<u>1.25</u>	<u>11.20</u>	<u>24.7</u>	<u>6.9</u>	<u>1200</u>	<u>219</u>	
	<u>1734</u>	<u>7.35</u>	<u>13.18</u>	<u>1.25</u>	<u>12.45</u>	<u>24.5</u>	<u>6.9</u>	<u>1200</u>	<u>136</u>	
	<u>1740</u>	<u>7.55</u>	<u>13.18</u>	<u>1.25</u>	<u>13.70</u>	<u>24.6</u>	<u>7.0</u>	<u>1200</u>	<u>151</u>	
	<u>1748</u>	<u>7.45</u>	<u>13.18</u>	<u>1.25</u>	<u>14.95</u>	<u>24.7</u>	<u>7.0</u>	<u>1200</u>	<u>832</u>	
	<u>1754</u>	<u>7.40</u>	<u>13.18</u>	<u>1.25</u>	<u>16.20</u>	<u>24.7</u>	<u>7.0</u>	<u>1200</u>	<u>62.9</u>	
	<u>1758</u>	<u>7.30</u>	<u>13.18</u>	<u>1.25</u>	<u>17.45</u>	<u>24.7</u>	<u>6.9</u>	<u>1200</u>	<u>48.4</u>	

* From TOC unless otherwise noted in Remarks



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* From TOC unless otherwise noted in Remarks



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TFM-0001825

Well Development Form

Project Number: <u>36478</u>				Well Number: <u>MW-04D</u>						
Project Information				Elevation of Well						
Facility Name: <u>TFM</u>				Ground Surface Elevation (GS):						
Location: <u>N</u> <u>E</u>				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: <u>08/30/06</u>				$53.93 - 13.71 = 40.22 \times 0.0408 \times 2^2 = 6.56 \text{ GAL}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: <u>54.0</u> feet from <u>TOP OF CASING</u>										
Depth to Top of Screen: <u>28.0</u> feet from <u>GROUND SURFACE</u>										
Length of Casing Screened: <u>23.0</u> feet										
Type of Formation Screened: <u>CALCAREOUS SHALE</u>										
Well Development Method										
Equipment:				Method Description:						
<input checked="" type="checkbox"/> Surge <input type="checkbox"/> Bail <input type="checkbox"/> Airlift <input type="checkbox"/> Pump				<u>SNAB WELL 10-15 MINUTES WITH SURGE BLOCK THEN BAIL WELL WITH BAILER UNTIL STABILIZATION OR DRY</u>						
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees <u>°C</u>)	pH (units)	S.C. <u>µS/cm</u>	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>09/01/06</u>	<u>1710</u>	<u>13.71</u>	<u>53.93</u>	<u>0.25</u>	<u>0.25</u>	<u>19.7</u>	<u>7.6</u>	<u>1900</u>	<u>30.3</u>	
	<u>1730</u>	<u>17.42</u>	<u>53.91</u>	<u>0.25</u>	<u>0.5</u>	<u>20.5</u>	<u>7.8</u>	<u>2000</u>	<u>>1000</u>	
	<u>1743</u>	<u>36.95</u>	<u>54.03</u>	<u>6.5</u>	<u>7.0</u>	<u>20.2</u>	<u>7.7</u>	<u>2100</u>	<u>>1000</u>	
	<u>1800</u>	<u>DRY</u>	<u>54.03</u>	<u>6.5</u>	<u>13.5</u>	<u>19.7</u>	<u>7.6</u>	<u>1900</u>	<u>>1000</u>	

* From TOC unless otherwise noted in Remarks



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TFM-0001826

Well Development Form

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Project Number: <u>36478</u>				Well Number: <u>MW-040</u>						
Project Information				Elevation of Well						
Facility Name: <u>TFM</u>				Ground Surface Elevation (GS):						
Location: <u>N</u> <u>E</u>				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: <u>08/30/06</u>				$54.00 - 13.79 = 40.21 \times 0.0408 \times 2^2 = 6.56$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: <u>54.0</u> feet from <u>TOP OF CASING</u>										
Depth to Top of Screen: <u>28.0</u> feet from <u>GROUND SURFACE</u>										
Length of Casing Screened: <u>23.0</u> feet										
Type of Formation Screened: <u>CALCAREOUS SHALE</u>										
Well Development Method										
Equipment:				Method Description:						
<input checked="" type="checkbox"/> Surge <input checked="" type="checkbox"/> Bail <input type="checkbox"/> Airlift <input type="checkbox"/> Pump				<u>SWAB WELL 10-15 MINUTES WITH SURGE BLOCK THEN BAIL WELL WITH BAILER UNTIL STABILIZATION OR DRY</u>						
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees <u>F</u>)	pH (units)	S.C. <u>LS/cm</u>	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>09/06/06</u>	<u>1700</u>	<u>13.79</u>	<u>54.00</u>	<u>0.05</u>	<u>0.05</u>	<u>20.3</u>	<u>7.3</u>	<u>1800</u>	<u>70.9</u>	
	<u>1730</u>	<u>13.78</u>	<u>54.00</u>	<u>0.05</u>	<u>0.1</u>	<u>21.1</u>	<u>8.1</u>	<u>1800</u>	<u>157</u>	
	<u>1745</u>	<u>35.71</u>	<u>53.98</u>	<u>6.5</u>	<u>6.6</u>	<u>20.2</u>	<u>8.1</u>	<u>1900</u>	<u>130</u>	
	<u>1800</u>	<u>48.22</u>	<u>53.98</u>	<u>6.5</u>	<u>13.1</u>	<u>19.8</u>	<u>8.3</u>	<u>1900</u>	<u>180</u>	
	<u>1807</u>	<u>DRY</u>	<u>53.48</u>	<u>2.0</u>	<u>15.1</u>	<u>19.3</u>	<u>8.1</u>	<u>1900</u>	<u>600</u>	

* From TOC unless otherwise noted in Remarks



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Well Development Form

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Project Number: 36478				Well Number: MW-06						
Project Information				Elevation of Well						
Facility Name: TFM				Ground Surface Elevation (GS):						
Location: N E				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: 08/15/06				$11.85 - 7.85 = 4.00 \times 0.0408 \times 2^2 = 0.6528$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))²</p>						
Total Depth of Well: 11.85 feet from TOP OF CASING										
Depth to Top of Screen: 3.65 feet from GROUND SURFACE										
Length of Casing Screened: 5 feet										
Type of Formation Screened: CLAY OVERBURDEN (3.85') / SANDSTONE (1.15')										
Well Development Method										
Equipment:				Method Description:						
<input checked="" type="checkbox"/> Surge <input type="checkbox"/> Bail <input type="checkbox"/> Airlift <input type="checkbox"/> Pump				SURGE WELL 10-15 MINUTES WITH SURGE BLOCK THEN BAIL WELL WITH RAILER UNTIL STABILIZATION OR DRY						
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (US/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
↓	1346	7.85	11.85	0.05	0.05	22.3	7.1	1300	13.8	CLEAR
	1404	7.71	11.85	0.05	0.1	22.0	7.2	1400	> 1000	MUDDY
	1408	8.65	11.85	0.7	0.8	22.0	7.2	1400	> 1000	MUDDY
	1413	9.29	11.86	0.7	1.5	21.8	7.3	1400	> 1000	MUDDY
	1417	9.55	11.86	0.7	2.2	21.7	7.2	1500	> 1000	MUDDY
	1422	10.00	11.88	0.7	2.9	21.4	7.2	1500	> 1000	MUDDY
	1429	10.40	11.88	0.7	3.6	21.1	7.2	1500	> 1000	MUDDY
	1435	DRY	11.88	0.4	4.0	20.9	7.3	1500	> 1000	MUDDY

* From TOC unless otherwise noted in Remarks



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TFM-0001831

APPENDIX F-3

Groundwater Field Parameters

Groundwater Field Parameters

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample Point	Sample Designator	Date Collected	Parameters			
			Temperature (°C)	pH (standard units)	Specific Conductivity (umhos/cm)	Turbidity (NTUs)
Monitoring Well Groundwater Samples						
MW-01 ¹	GW01	9/29/2005	20.0	7.4	800	25.4
MW-01 ¹	GW02	5/11/2006	16.0	7.2	800	1.35
MW-01 ¹	GW03	9/19/2006	23.2	7.6	800	13.2
MW-02	GW01	9/29/2005	NM ²	NM ²	NM ²	NM ²
MW-02	GW02	5/12/2006	20.3	6.9	6600	5.70
MW-02	GW03	9/19/2006	26.2	7.4	5100	24.4
MW-03	GW01	9/29/2005	22.1	7.2	1800	16.0
MW-03	GW02	5/12/2006	17.4	7.3	1500	4.10
MW-03	GW03	9/19/2006	21.9	7.0	1600	17.1
MW-04	GW01	9/29/2005	24.7	6.6	1200	41.2
MW-04	GW02	5/12/2006	19.5	6.9	600	0.42
MW-04	GW03	9/19/2006	22.2	7.0	1200	22.9
MW-04D	GW03	9/19/2006	19.2	7.9	2300	7.20
MW-05	GW01	9/29/2005	NM ²	NM ²	NM ²	NM ²
MW-05	GW02	5/12/2006	17.1	7.2	4100	67.3
MW-05	GW03	9/19/2006	24.6	7.2	3900	222
MW-06	GW03	9/19/2006	22.6	7.3	1300	24.9
Residential Well Groundwater Samples						
RW-01	GW01	10/3/2005	19.0	7.5	800	43.3
RW-01	GW02	5/12/2006	18.4	7.2	700	34.8
RW-01	GW03	9/20/2006	19.1	7.4	800	14.5

Notes:

1 = Upgradient monitoring well considered as background monitoring well.

2 = Field parameter not measured due to insufficient volume of water available.

°C = Degrees Celcius

NM = not measured

NTUs = Nephelometric Turbidity Units

APPENDIX F-4

Groundwater Sampling Forms

September and October 2005 Sampling Events

DATE: 09/29/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: Sunny, clear, 60s, breezy (N)
WELL NUMBER _____ DEPTH TO WATER (ft): 12.98

DEPTH TO WATER (ft): 12.98

TOTAL DEPTH (ft): 14.80 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 1.82 ft of water in casing X .1632 gallons/foot = 0.297 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other _____

[illegible]

Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

[illegible]

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): dry TIME FINAL DEPTH TAKEN: 1150

SAMPLE ID: MW-DI/GW01 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (Ag, Cd, Pb, Zn), General Chemistry (Alkalinity, COD, Nitrate as Nitrogen, Chloride, Sulfate, TOC)

IDW TOTAL: N/A Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
David Barker David L. Barker 09/24/05

REVIEWED: _____

FIELD GROUND-WATER SAMPLING REPORT

DATE: 09/29/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A

PROJECT NUMBER: 36478 WEATHER: Sunny, clear, 60s, breezy (w)

WELL NUMBER _____ DEPTH TO WATER (ft): 15.28

MW-2.

TOTAL DEPTH (ft): 15.99 WELL DIAMETER (inches): 2

PURGING

CASING VOLUME CALCULATION: 0.71 ft of water in casing X 1632 gallons/foot = 0.116 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other _____

[illegible]

Continued on back (circle one) yes / no

SAMPLING

Equipment Used: Same as above Other _____

[illegible]

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): dry TIME FINAL DEPTH TAKEN: 1236

SAMPLE ID: MW-02/GW01 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn) (only filled ~ 250 mL)

IDW TOTAL: N/A Flow through cell model number.: N/A

PREPARED: NAME SIGNATURE DATE
David Barker David Barker 09/29/05

REVIEWED: _____

FIELD GROUND-WATER SAMPLING REPORT

DATE: 04/29/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A
 PROJECT NUMBER: 36478 WEATHER: Sunny, clear, 60s, breezy (N)
 WELL NUMBER DEPTH TO WATER (ft): 8.67

MW-3

TOTAL DEPTH (ft): 15.52 WELL DIAMETER (inches): 2

PURGING

CASING VOLUME CALCULATION: 6.85 ft of water in casing X .1632 gallons/foot = 1.118 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump (Bailer) Other _____

Time (24 hr)	Amount Purged (gals)	Flow Rate (ml/min)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)
Will initially attempt to stabilize well, if well does not stabilize before water level becomes critical, sampling will commence									
1302	1	—	7.1	24.2	1.80	31.3	—	—	8.67
1308	1.1	—	7.1	23.3	1.80	55.3	—	—	10.61
1314	2.2	—	7.1	22.8	1.80	602	—	—	11.60
1320	3.3	—	7.2	22.1	1.80	609	—	—	12.67
Since well did not stabilize in 3 readings, will return later and sample without collecting readings, will allow time for turbidity to fall									
1629	3.3	—	—	—	—	16.0	—	—	9.98
Sample became more turbid with volume									
Continued on back (circle one) yes / <u>no</u>									

SAMPLING

Equipment Used: (Same as above) Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1629					16.0				clear

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 11.50 TIME FINAL DEPTH TAKEN: 1656

SAMPLE ID: MW-03/GW01 SAMPLE ID FOR QC: MW-1000/GW01

PARAMETERS REQUESTED FOR ANALYSIS: ICA (A, Cd, Pb, Zn), General Chemistry (Alkalinity, CO₂, NO₃ as N, Sulfate, TOC)

IDW TOTAL: ~3.5 gal Flow through cell model number: N/A

PREPARED: NAME David Barker SIGNATURE David Barker DATE 04/29/05

REVIEWED: _____

FIELD GROUND-WATER SAMPLING REPORT

DATE: 09/29/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A

PROJECT NUMBER: 36478 WEATHER: Sunny, clear, 60s, breezy (WNE)

WELL NUMBER _____ DEPTH TO WATER (ft): 5.62

MW-4

TOTAL DEPTH (ft): 15.52 WELL DIAMETER (inches): 2

PURGING

CASING VOLUME CALCULATION: 4.9 ft of water in casing X 1.632 gallons/foot = 1.616 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other _____

[illegible]Continued on back (circle one) yes / no

SAMPLING

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1411	9.8	6.6	24.7	1.20	41.2	—	—	6.65	clear

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 5.86 TIME FINAL DEPTH TAKEN: 1428

SAMPLE ID: MW-04/GW01 SAMPLE ID FOR QC: MS/MSD

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn), General Chemistry (Alkalinity, COD, NO₃-N, TOC, Se, Fat P)

IDW TOTAL: 5 gal Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
David Barker David Barker 09/29/05

REVIEWED: _____

FIELD GROUND-WATER SAMPLING REPORT

DATE: 09/29/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A

PROJECT NUMBER: 36478 WEATHER: Sunny, clear, 70s, breezy (W)

WELL NUMBER _____ DEPTH TO WATER (ft): 12.33

MW-5

TOTAL DEPTH (ft): 13.29 WELL DIAMETER (inches): 2

PURGING

CASING VOLUME CALCULATION: 0.96 ft of water in casing X 1632 gallons/foot = 0.157 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other _____

[illegible]

Continued on back (circle one) yes / no

SAMPLING

Equipment Used: Same as above Other _____

[illegible]

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): dm TIME FINAL DEPTH TAKEN: 1458

SAMPLE ID: MW-05/GW01 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Hg, Zn) ~ 500 mL filtered, ~ 500 mL unfiltered

IDW TOTAL: N/A Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
David Barker *David Barker* 09/29/05

REVIEWED: _____

DATE: 10/03/05 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: Partly cloudy, humid, 90s, breezy (S)
WELL NUMBER _____ DEPTH TO WATER (ft): 11.45

WELL NUMBER

DEPTH TO WATER (ft): 11.45

RW-1

TOTAL DEPTH (ft): 30.15 WELL DIAMETER (inches): 6

CASING VOLUME CALCULATION: 18.70 ft of water in casing X 1.469 gallons/foot = 27.47 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other _____

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1443	82.5	7.5	19.0	0.80	43.3	—	—	15.95	clear

FERROUS IRON (mg/L): N/A

ash and dust
particles

FINAL DEPTH TO WATER (ft TOC): 1425 TIME FINAL DEPTH TAKEN: 1513

SAMPLE ID: RW-01/GW001 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn), General Chemistry, Alkalinity, CO₂, NO₃ as N,
DOC, SO₄

IDW TOTAL: 8 Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
David Barker Paul S. Barker 10/03/05

REVIEWED: _____

May 2006 Sampling Event

DATE: 05/11/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: SUNNY, 50s, MODERATE WIND (N 10-20 MPH)
WELL NUMBER _____ DEPTH TO WATER (ft): 3.92

DEPTH TO WATER (ft): 3.92

TOTAL DEPTH (ft): 14.85 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 10.95 ft of water in casing X 0.162 gallons/foot = 1.78 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer ~~Other~~ AERIALTATIC PUMP

[illegible]

Continued on back (circle one) yes no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1/137	5.4	7.2	16.0	800	1.35				CLEAR

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 14.31 TIME FINAL DEPTH TAKEN: 1145

SAMPLE ID: MW-01/GW02 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn) [FIELD FILTERED]

IDW TOTAL: ~5.5 GAL Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
JAVIN BARKER *Javin Barker* 05/11/06

REVIEWED: _____

DATE: 05/11/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: PARTLY CLOUDY, 60s, MODERATE WIND, BUSTY (NW 20 MPH)
WELL NUMBER _____ DEPTH TO WATER (ft): 4.70

TOTAL DEPTH (ft): 16.03 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 11.33 ft of water in casing X 0.1632 gallons/foot = 1.85 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other NEURISTATIC ALUMINO

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

05/12/06

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
1415	5.4	6.9	20.3	6600	5.70			14.50	CLEAR

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 284 TIME FINAL DEPTH TAKEN: 1444

SAMPLE ID: MW-02/GW02 SAMPLE ID FOR QC: MW-1000/GW02 (GENERAL CHEMISTRY ONLY)

PARAMETERS REQUESTED FOR ANALYSIS: ICA (As, Cd, Pb, Zn) [FIELD FILTERED] GENERAL CHEMISTRY (ALKALINITY, CO₂, CHLORIDE, NO₃, etc.)

IDW TOTAL: 25.5 GAL Flow through cell model number: N/A FILLED 750/1000 mL AND SULFATE 0.0

PREPARED: DAVID BARKER NAME SIGNATURE DATE
05/12/06

REVIEWED: _____

DATE: 05/12/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: SUNNY, 50s, WIND-CALM
WELL NUMBER _____ DEPTH TO WATER (ft): 6.71

DEPTH TO WATER (ft): 6.71

MW-03

TOTAL DEPTH (ft): 15.57 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 8.86 ft of water in casing X 0.1632 gallons/foot = 1.45 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other *AEROSTATIC PUMP*

[illegible]

Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
0925	4.5	7.3	17.4	1500	4.10			11.51	Clear

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 11.35 TIME FINAL DEPTH TAKEN: 0941

SAMPLE ID: MW-103/GW02 SAMPLE ID FOR QC: MW-1001/GW02

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn) [FIELD FILTERED]

IDW TOTAL: ~4.56AL Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
DAVID PARKER *David S. Parker* 05/12/06

REVIEWED: _____

DATE: 05/12/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: SUNNY, 60s, WIND EVE 5MPH
WELL NUMBER _____ DEPTH TO WATER (ft): 356

DEPTH TO WATER (ft): 3.56

TOTAL DEPTH (ft): 13.18 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 9.62 ft of water in casing X 0.1632 gallons/foot = 1.57 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer ☒ Other PERISTALTIC PUMP

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1040	4.5	6.9	19.5	600	0.42			4.35	CLEAR

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 4.56 TIME FINAL DEPTH TAKEN: 1056

SAMPLE ID: MW-04/GW02 SAMPLE ID FOR QC: MS/MS0

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn) [FIELD ALTERED]

IDW TOTAL: ~45 GAL Flow through cell model number: N/A

PREPARED: NAME SIGNATURE DATE
DAVID BARKER *David Barker* 05/12/06

REVIEWED: _____

DATE: 05/11/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: PARTLY CLOUDY, 60s, WIND WNW 10-20 MPH
WELL NUMBER _____ DEPTH TO WATER (ft): 4.15

DEPTH TO WATER (ft): 4.15

TOTAL DEPTH (ft): 13.33 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 9.18 ft of water in casing X 0.1632 gallons/foot = 1.50 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer (Other) PERISTALTIC PUMP

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

05/12/80

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
1503	4.5	7.2	17.1	4100	67.3			9.82	

FERROUS IRON (mg/L): N/A

FINAL DEPTH TO WATER (ft TOC): 11.6 TIME FINAL DEPTH TAKEN: 15/6

INITIALLY TURBID
(FIRST ~ 250 mL, THEN)
(CLEAR TO SLIGHTLY CLOUDY)

SAMPLE ID: MW-05/GW02 SAMPLE ID FOR QC: MS/MS0

PARAMETERS REQUESTED FOR ANALYSIS: GENERAL CHEMISTRY (ALKALINITY, CO₃, CHLORIDE, NO₃, AS N, SULFATE, TOC)

IDW TOTAL: ~4.5 GAL Flow through cell model number: N/A

PREPARED: DAVID BARKER David Barker 05/12/06

REVIEWED: _____

DATE: 05/12/06 SITE: TAM PID READING at WELL HEAD (ppm): N/A
PROJECT NUMBER: 36478 WEATHER: SUNNY, 70s, CALM
WELL NUMBER _____ DEPTH TO WATER (ft): 7.10

DEPTH TO WATER (ft): 7.10

RW-01

TOTAL DEPTH (ft): 30.27 WELL DIAMETER (inches): 6

CASING VOLUME CALCULATION: 23.17 ft of water in casing X 1.464 gallons/foot = 34.04 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other

[illegible]

Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
1800	105	7.2	18.4	700	34.8			13.17	

FERROUS IRON (mg/L): N/A

SOME ASH & RUST PARTICLES

FINAL DEPTH TO WATER (ft TOC): 9.75 TIME FINAL DEPTH TAKEN: 1818

SAMPLE ID: RW-01/GW02 SAMPLE ID FOR QC: N/A

PARAMETERS REQUESTED FOR ANALYSIS: ICP (As, Cd, Pb, Zn) [FIELD FILTERED]

IDW TOTAL: 20562 Flow through cell model number.: N/A

PREPARED: NAME SIGNATURE DATE
DAVID BARKER *David Barker* 05/12/06

REVIEWED: _____

September 2006 Sampling Event

DATE: 09/18/06 SITE: TOM PID READING at WELL HEAD (ppm): NA

WELL NUMBER _____ DEPTH TO WATER (ft): 11.76

MW-01

TOTAL DEPTH (ft): 14.81 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 3.05 ft of water in casing X 0.1632 gallons/foot = 0.497 total gallons/casing volume

[illegible]

Continued on back (circle one) yes / no

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (μ S/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
1200	1.5	7.6	23.2	800	13.2	—	—	13.65	CLEAR

FINAL DEPTH TO WATER (ft TOC): DRY TIME FINAL DEPTH TAKEN: 1220

SAMPLE ID: MW-01/GW03

SAMPLE ID FOR QC: NA

METALS - ICP (As, Cd, Pb, Zn) - FILTERED & UNFILTERED (250-ML PER METAL ANALYSIS)

PARAMETERS REQUESTED FOR ANALYSIS: GENERAL CHEMISTRY, ALKALINITY, CO₂, CHLORIDE, NO₃ AS N, SULFATE
(~300 ML FOR GEN. CHEM.; NO TOC COLLECTED)

IDW TOTAL: ~1.5 GAL Flow through cell model number: NA

NAME: DAVID BARKER SIGNATURE:  DATE: 09/19/00

REVIEWED: _____

DATE: 09/19/06 SITE: JFM PID READING at WELL HEAD (ppm): NA

WEATHER: 50° SUNNY, CLEAR, 50s 0-10 MPH N

DEPTH TO WATER (ft): 9.33

TOTAL DEPTH (ft): 1656 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 6.23 ft of water in casing X 0.1632 gallons/foot = 1.02 total gallons/casing volume

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (μ S/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
0907	3.0	7.0	21.9	1600	12.1	—	—	12.91	CLEAR

FINAL DEPTH TO WATER (ft TOC): 13.85 TIME FINAL DEPTH TAKEN: 0953

SAMPLE ID FOR QC: MW-1000/GW03

PARAMETERS REQUESTED FOR ANALYSIS: METALS - ICP (As, Cd, Pb, Zn) - FILTERED & UNFILTERED
GENERAL CHEMISTRY - ALKALINITY, CO₃, CHLORIDE, NO₃, AS N,
 IDW TOTAL: ~ 3.0 GAL Flow through cell model number.: NA SULFATE, TDC

IDW TOTAL: ~3.0 GAL Flow through cell model number: NA

NAME
PREPARED: DAVID BARKER

SIGNATURE
David H. Gribble

DATE
09/19/06

REVIEWED: _____

DATE: 09/19/06 SITE: TFM PID READING at WELL HEAD (ppm): NA

WEATHER: SUNNY CLEAR 60% CALM

DEPTH TO WATER (ft): 9.05

TOTAL DEPTH (ft): 13.15 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 4.10 ft of water in casing X 0.1632 gallons/foot = 0.669 total gallons/casing volume

[illegible]

Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1035	2.8	7.0	22.2	1200	22.9	—	—	10.18	CLEAR

FINAL DEPTH TO WATER (ft TOC): 9.65 TIME FINAL DEPTH TAKEN: 1105

SAMPLE ID FOR QC: M5/M60

PARAMETERS REQUESTED FOR ANALYSIS: GENERAL CHEMISTRY - ALKALINITY, CO₃ CHLORIDE
NO₃, AS, N, SULFATE, TOC

IDW TOTAL: ~3.0 GAL Flow through cell model number: NA

NAME
PREPARED: JAVIA PARKER

SIGNATURE _____
David H. Embury

DATE
09/19/06

REVIEWED: _____

DATE: 09/19/06 SITE: TFM PID READING at WELL HEAD (ppm): N/A

WEATHER: SUNNY, CLEAR, T₀₂ 0-10 MPH SW

DEPTH TO WATER (ft): 13.47

TOTAL DEPTH (ft): 54.02 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 40.55 ft of water in casing X 0.1632 gallons/foot = 6.62 total gallons/casing volume

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1922	19.8	7.9	19.2	2300	7.20	—	—	24.41	CLEAR

FERROUS IRON (mg/L): NA

FINAL DEPTH TO WATER (ft TOC): 22.24 TIME FINAL DEPTH TAKEN: 1932

SAMPLE ID: MW-06/GW03

SAMPLE ID FOR QC: NA

PARAMETERS REQUESTED FOR ANALYSIS: METALS - ICP (AS, CD, Pb, Zn) - FILTERED & UNFILTERED
GENERAL CHEMISTRY - ALKALINITY, CO₂, CHLORIDE, NO₃, AS, N
SULFATE, TOC

IDW TOTAL: ~19.8 GAL Flow through cell model number: NA

	<u>NAME</u>	<u>SIGNATURE</u>	<u>DATE</u>
PREPARED:	DAVID BARICKER	<i>David Baricker</i>	09/19/06

REVIEWED: _____

DATE: 09/18/06 SITE: TFM PID READING at WELL HEAD (ppm): NA

WEATHER: SUNNY. 70s 0-10 MPH W

DEPTH TO WATER (ft): 9.10

TOTAL DEPTH (ft): 13.31 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 4.21 ft of water in casing X 0.1632 gallons/foot = 0.687 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other PERISTALTIC PUMP

Continued on back (circle one) yes / no

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (°C)	Conductivity (μ S/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1320	2.1	7.2	24.6	3900	222	—	—	11.91	CLEAR

FINAL DEPTH TO WATER (ft TOC): 104 TIME FINAL DEPTH TAKEN: 135

SAMPLE ID FOR QC: NA
METALS - ICP (As, Cd, Pb, Zn) - FILTERED & UNFILTERED (in 500 mL PER METALS CONTAINER)

IDW TOTAL: ~2.1 GAL Flow through cell model number.: NA

NAME: JAMES BARKER SIGNATURE: *James Barker* DATE: 09/19/00

TFM-0001855

DATE: 09/18/06 SITE: TFM PID READING at WELL HEAD (ppm): NA

WEATHER: SUNNY, 70s CALM

DEPTH TO WATER (ft): 7.88

TOTAL DEPTH (ft): 11.86 WELL DIAMETER (inches): 2

CASING VOLUME CALCULATION: 3.98 ft of water in casing X 0.1632 gallons/foot = 0.649 total gallons/casing volume

Equipment Used: Dedicated Bladder Pump Nondedicated Bladder Pump Bailer Other PERISTALTIC PUMP

[illegible]

Continued on back (circle one) yes no

SAMPLING 09/19/06 Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs.
1415	2.0	7.3	22.6	1300	24.9	—	—	7.84	CLEAR

FERROUS IRON (mg/L): NA

FINAL DEPTH TO WATER (ft TOC): 1430 ~~1430~~ 8.85 TIME FINAL DEPTH TAKEN: 8.85 ~~1430~~ 1430

SAMPLE ID: MW-06 / GW03

SAMPLE ID FOR QC: NA

METALS - ICA (As, Cd, Pb, Zn) - FILTERED & UNFILTERED

PARAMETERS REQUESTED FOR ANALYSIS: GENERAL CHEMISTRY - ALKALINITY, CO₂, CHLORIDE, IOD₂ AS N,
SULFATE, TDS

IDW TOTAL: ~2.0 GAC Flow through cell model number.: NA

NAME
PREPARED: DANZA BARKER

SIGNATURE
David M. Cohen

DATE
09/19/06

REVIEWED:

DATE: 09/20/06 SITE: TFM PID READING at WELL HEAD (ppm): NA

WELL NUMBER . DEPTH TO WATER (ft): 13.36

RW-01

TOTAL DEPTH (ft): 30.15 WELL DIAMETER (inches): 6

CASING VOLUME CALCULATION: 16.79 ft of water in casing X 1.469 gallons/foot = 24.66 total gallons/casing volume

[illegible]Continued on back (circle one) yes / no

Equipment Used: Same as above Other _____

Sample Time (24 hr)	Total Purged (gals)	pH	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	D.O. (mg/L)	Depth to Water (ft TOC)	Obs
1720	75	7.4	19.1	800	145	—	—	16.54	CLEAR

FERROUS IRON (mg/L): 1/A

FINAL DEPTH TO WATER (ft TOC): 15.28 TIME FINAL DEPTH TAKEN: 1733

SAMPLE ID: RW-01/GW03

SAMPLE ID FOR QC: NA
 METALS - ICP (As, Cd, Pb, Zn) - FILTERED & UNFILTERED

PARAMETERS REQUESTED FOR ANALYSIS: GENERAL CHEMISTRY ALKALINITY, CO₃ CHLORIDE, NO₃ AS N,
SULFATE, TAC

IDW TOTAL: ~75 GAL Flow through cell model number.: NA

PREPARED: NAME SIGNATURE DATE
DAVID BARKER *David Barker* 09/20/06

REVIEWED: _____

APPENDIX F-5

Survey Data

**TULSA FUEL AND MANUFACTURING
COLLINSVILLE, OK
DATE OF SURVEY: 08-17-05
SURVEY TO MEASURE ELEVATION OF MONITOR WELLS**

Horizontal Datum: NAD83 Vertical Datum: NAVD88

WELL I.D.	NORTHING (U.S. Survey Ft)	EASTING (U.S. Survey Ft)	CASING ELEVATION (U.S. Survey Ft)	NATURAL GROUND ELEVATION (U.S. Survey Ft)	SHOT NO. CASING / NG	COMMENTS
PZ-01	497987.45	2602366.03	675.40	673.15	17,16	
PZ-02	498124.99	2602881.17	669.40	666.34	15,14	
PZ-03	498084.15	2603612.83	649.24	646.20	10,9	
PZ-04	497676.77	2603274.59	653.76	650.79	13,12	
PZ-05	497608.64	2602422.94	664.51	661.82	19,18	
PZ-06	497389.34	2601510.62	674.37	671.28	21,20	
PZ-07	497225.00	2602108.09	664.65	661.50	25,24	
PZ-08	497199.15	2603144.19	652.35	649.67	27,26	
PZ-09	496734.95	2602836.90	651.63	648.48	29,28	
PZ-10	496629.51	2602323.31	654.81	651.71	31,30	
PZ-11	496690.89	2601557.54	661.15	659.09	23,22	
WATER LEVEL	496546.01	2602359.61		645.70	32	STRIP MINE PIT
TBM1	497824.73	2603569.97		647.47	4	TBM1: SET 5/8" ROD AT ENTRANCE GATE
TOP 2.5' CULVERT	498473.89	2603850.37		647.66	7	BACK SIGHT AT CHURCH
ADS 138	498868.36	2602059.98		697.09		COORDINATES FROM PUBLISHED DATA SHEET
ADS 139	499019.76	2612630.91		636.67		COORDINATES FROM PUBLISHED DATA SHEET



L.W. SURVEY ENGINEERING & DESIGN COMPANY

TRANSMITTAL

One East First Street, Suite 201
Duluth, MN 55802
218-722-8211 Phone
218-722-8207 Fax

DATE: 11-03-06

PROJECT
NUMBER: 50266-001

TO: Burns and McDonnell
9400 Ward Parkway
Kansas City, MO 64114

ATTN: David Barker
Tim Stecher

SUBJECT: Monitor well location at Tulsa Fuel and Manufacturing site, Collinsville, OK.

THESE ARE
TRANSMITTED:

FOR FILE AND
DISTRIBUTION

FOR REVIEW
AND COMMENT

FOR YOUR
APPROVAL

FOR YOUR
INFORMATION

PER YOUR
REQUEST ☒

FILE NAME	QUANTITY	DESCRIPTION
MONITOR WELLS 4NEW AND 6	Folder	Field drawing and table of coordinates and elevations showing recently installed monitor wells MW-04New and MW-06.

Message:

This transmittal is the location of Monitoring Wells "New 4" and 6 for the project. The survey was performed on October 13, 2006. We certainly appreciate working with you again. Please do not hesitate to call if you have any questions.

Thank you,

Lee R. Marlow
LW Survey, Engineering and Design Company
2156 West Albany ST
Broken Arrow, OK 74012
918-251-1035 lee.marlow@lwsurvey.com

IF ENCLOSURES ARE NOT AS NOTED, PLEASE NOTIFY US AT ONCE

LWS-OFFICE-ADM-003-MP-001

TULSA FUEL AND MANUFACTURING**COLLINSVILLE, OK****DATE OF SURVEY: 10-13-06****SURVEY TO LOCATE MONITOR WELLS - #4New and #6**

50266-001

Horizontal Datum: NAD83 Vertical Datum: NAVD88

State Plane Coordinates OK-NORTH

Elevations from level loop survey.

Horizontal coordinates from traverse survey.

Horizontal coordinates are at monument.

WELL I.D.	NORTHING (U.S. Survey Ft)	EASTING (U.S. Survey Ft)	CASING ELEVATION (U.S. Survey Ft)	MONUMENT ELEVATION (U.S. Survey Ft)	NATURAL GROUND ELEVATION (U.S. Survey Ft)	SHOT NO. ON MONUMENT	COMMENTS
TBM1	497824.73	2603569.97		647.47		1	TBM1:SET 5/8" ROD AT ENTRANCE GATE, 8-17-05
MW-04NEW	496735.99	2602828.05	651.81		649.0	2	
MW-06	496651.49	2603211.94	648.25		645.6	3	
TBM1	497824.73	2603569.97		647.47		1	TBM1:SET 5/8" ROD AT ENTRANCE GATE, 8-17-05

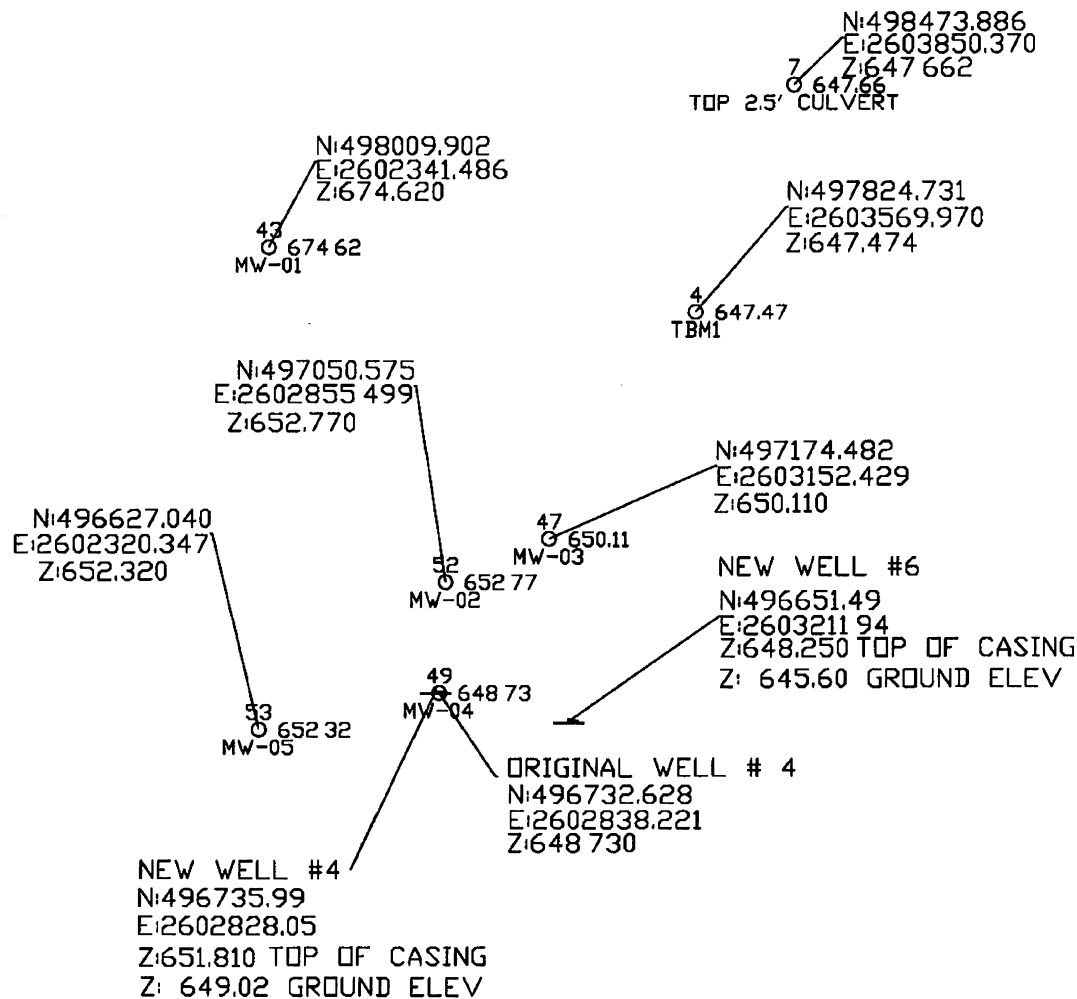
APPENDIX G

Photographs

LOCATION OF NEW WELL NO. 4 AND WELL NO. 6

OCTOBER 13, 2006 - SECOND SURVEY

Burns & McDonnell
Tulsa Fuel & Manufacturing
Survey to Locate Monitor Wells



09-21-05 (REVISION No. 1 10-13-06) ADD MW'4NEW' AND MW6)



L.W. SURVEY AND ENGINEERING DESIGN COMPANY
2156 W. ALBANY ST., BROKEN ARROW, OK 74012
(918) 251-1035 TELEPHONE (918) 251-0425 FAX



3/29/2005
On-Site Residence, including burned out house



11/27/2006
Buildings and vehicles on-site near former residence.



10/3/2005
On-Site Residential Well located in burned-out residence.



3/29/2005
Access Road/Driveway. Composed of waste materials.



11/27/2006

View from Strip Mine Pit looking North toward former smelter operations area. Note debris and slag piles.



11/27/2006

View from eastern site boundary toward the west. Note slag and debris piles.



3/29/2005

Retorts located near railroad on eastern property boundary. Note blackberry bushes growing within the waste materials.



3/29/2005

Retort located on-site.



3/29/2005
Looking east - culvert draining to ponded area on Plat 34010 Sec 32 T22N R14E.



5/10/2006
Ponded area east of TFM on Plat 34010 Sec 32 T22N R14E.



5/10/2006
Looking east from TFM toward culvert draining to Plat 34010 Sec 32 T22N R14E.



5/10/2006
Looking west toward TFM at culvert that drains TFM property.



5/8/2006
TFM Pond 1



11/27/2006
TFM Pond 1 (partially dry).



5/8/2006
TFM Pond 2



11/27/2006
TFM Pond 2 (dry).



5/8/2006
TFM Pond 3



11/27/2006
TFM Pond 3 (dry). Standing in pond looking toward retort dam.



5/8/2006
TFM Pond 4



11/27/2006
TFM Pond 4 (dry).



5/8/2006
TFM Pond 5



11/27/2006
TFM Pond 5 (dry).



5/8/2006
Mid-Site Ravine



11/27/2006
Strip Mine Pit. Looking east. Note slag material at the edge of bank.



8/30/2005

Location TRB-09DW, apparent driveway of smelter waste materials at 1400 S 12th St.



9/13/2006

Location TRB-09DW during Phase II activities. Note waste materials no longer appear to be present.



8/30/2005

Retort embankment at 12th and Maple.



8/30/2005

Smelter waste materials observed at 15th and Exchange.



9/6/2006
Apparent smelter waste near Location OSL-116. View looking North.



9/6/2006
Apparent smelter waste near Location OSL-116. View looking southwest toward Faith Assembly Church and TFM.

APPENDIX H

Investigative Derived Waste (IDW) Inventory

Field Copy

IDW Inventory Worksheet

Page ____ of ____

Project Name:		Project Number: 36478		BMCD Point of Contact:		
Facility Name:		OU Number:		Point of Contact Phone No.:		
Container No.	Location	Generation Date(s)	Contents	Quantity	Drum Condition	Remarks
IDW-01		07/29/05 - 08/01/05	soil	18 gal.	good	SP-01 to SP-53
IDW-02		08/02/05	soil	12 gal.	good	P2-01 to P2-11
IDW-03		09/14/05	soil	30 gal.	good	MW-1
IDW-04		09/16/05	soil	40 gal.	good	MW-2
IDW-05		09/16/05	soil	40 gal.	good	MW-3
IDW-06		09/16/05	soil	27 gal.	good	MW-4
IDW-07		09/16/05	soil	27 gal.	good	MW-5
IDW-08		08/24/05 - 08/31/05	soil	20 gal.	good	offsite soil
IDW-09		08/24/05 - 09/31/05	soil	1 gal.	good	offsite soil
IDW-10		09/27/05 - 09/28/05	water	53 gal.	good	MW-1 to MW-5, RW-1
IDW-11		10/03/05	water	53 gal.		RW-1
IDW-12		10/03/05 - 05/11/06	water	55 gal.	good	RW-1 purge MW-1 to MW-5 purge
IDW-13		09/16/05 - 09/16/05	water plastic		good	drilling down MW-1 to MW-5
IDW-14		05/11/06 - 05/12/06	water	53 gal.	good	MW-01 to MW-05, RW-01 purge water
IDW-15		05/11/06 - 08/21-22/06 09/01-06/06	water	54 gal. 52 gal.	good	RW-01 purge MW-06, MW-07 development
IDW-16		09/15/06	soil cuttings	27 gal.	good	MW-06 drilling cuttings
IDW-17		09/15/06 - 09/19/06	soil cuttings	50 gal.	good	MW-040 drilling cuttings
IDW-18		09/19/06 - 09/30/06	soil cuttings	50 gal.	good	MW-040 redox cuttings
IDW-19		09/19/06 - 09/20/06	water	50 gal.	good	MW-01 to MW-06, RW-01 purge
IDW-20		09/20/06	water	50 gal.	good	RW-01 purge

Liquid Investigation-Derived Waste Results

*Remedial Investigation Report
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma*

Sample ID: Date Collected: Comments:		IDW/10-12 9/20/2006	IDW/14-15/19-20 9/20/2006
Parameter	Units		
Arsenic, Total	µg/L	10 U	10 U
Cadmium, Total	µg/L	5 U	5 U
Lead, Total	µg/L	10 U	10 U
Zinc, Total	µg/L	9	149

µg/L = micrograms per liter

U = Not detected. Value is the reporting limit.

APPENDIX I

Wind Rose Data – Tulsa International Airport



National Water
and Climate Center



NWCC Home | About Us | Products | Publications | News | Partnerships | Contact Us

Search

Climate Products

General Information
GIS Data
Climate Reports
Climate Data

Find a Service Center

States and Regions


Centers and Institutes

Wind Rose Data

Wind Rose Plots (ftp site)

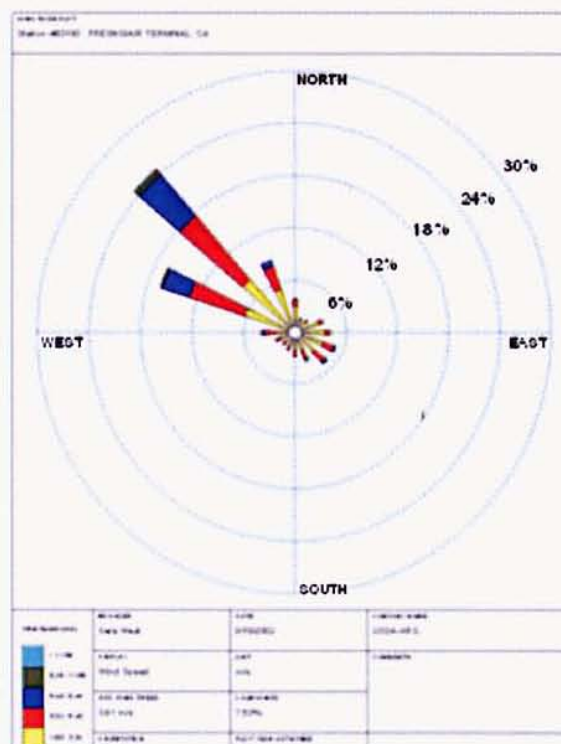
The above link takes you to an ftp server that houses the wind rose plot images. The directory is organized by State and Climate Station name. Within each Climate Station directory, there are images in both .emf and .gif formats for each of the twelve months. The .emf images can be viewed using Internet Explorer 6.x or by using the "insert picture" option in MS-Word. The .emf images are larger than the .gif images as shown in the example below, and show more detail.

Note: Wind speeds shown are in meters per second. To convert meters per second into miles per hour just multiply by 2.237. Thus, a 5 m/sec wind is an 11.19 mph wind, and a 10 m/sec wind converts to 22.37 mph.

Additional note: Anemometer heights were not adjusted to a common height in the SAMSON database (see below). For user's information, a file containing the anemometer height history at each of these stations is available [HERE](#).  Two files are shown: one in meters, and the other in feet. Only data from 1961 to 1990 were used in SAMSON, and in the development of these wind roses.

A **wind rose** gives a very succinct but information-laden view of how wind speed and direction are typically distributed at a particular location. Presented in a circular format, the wind rose shows the frequency of winds blowing FROM particular directions. The length of each "spoke" around the circle is related to the frequency of time that the wind blows from a particular direction. Each concentric circle represents a different frequency, emanating from zero at the center to increasing frequencies at the outer circles. The wind roses shown here contain additional information, in that each spoke is broken down into discrete frequency categories that show the percentage of time that winds blow from a particular direction **and** at certain speed ranges. All wind roses shown here use 16 cardinal directions, such as north (N), NN, NE, etc.

An example is shown here. It is the April wind rose for Fresno, California, based on 30 years of hourly wind data (all hours of the day). This rose shows that the winds at Fresno in April blow from the northwest much of the time. In fact, the 3 spokes around the northwest direction (WNW, W and NNW) comprise 50% of all hourly wind directions. This is quickly calculated by taking the sum of the frequencies of each of these directions ($16+25+9=50\%$). This also shows that the wind rarely blows from the northeast or the southwest. These wind roses also provide details on speeds from different directions. Examining winds from the northwest (the longest spoke) one can determine that approximately 8% of the time in April at Fresno the wind blows from the northwest at speeds between 1.8 and 3.34 meters per second. Similarly, on this spoke it can be calculated that winds blow from the northwest at speeds between 3.34 and 5.4 m/sec about 10% of the time ($18\% - 8\%$), at speeds between 5.4 and 8.49 m/sec about 6% of the time ($24-18$), between 8.49 and 11.06 m/sec about 1% of the time ($25-24$), and less than 0.5% of the time at speeds greater than 11.06 m/sec. Please note the legend at the bottom of the wind rose that gives the speed categories and their associated colors.



Select the above example for full GIF Image

The legend at the bottom gives additional information such as the unit (m/sec), the average wind speed for the month over all hours (in this case 3.61 m/sec), and percentage of time that the winds are calm (7.53%), and the years and month and hours of data on which each rose was constructed. **Note: Even though it says 1961 as the year, these data are for 30 years (1961-1990). The software only prints the beginning year.** All hours of the day (24 readings per day) are used to construct these wind roses. All wind roses available here are for the period 1961-1990.

The software used to generate these high-quality wind roses is courtesy of Lakes Environmental Software and is called WR-PLOT.

To calculate the typical amount of time that the wind blows from a particular direction and certain speeds just multiply the respective frequency by the appropriate amount of time. In our example with Fresno in April, there are 30 days x 24 hours/day in April, or 720 hours. From the wind rose we calculated that winds blow from the northwest at speeds between 5.4 and 8.49 m/sec 6% of the time. This represents $0.06 \times 720 = 43.2$, or about 43 hours typically have winds from the northwest at these speeds at Fresno April.

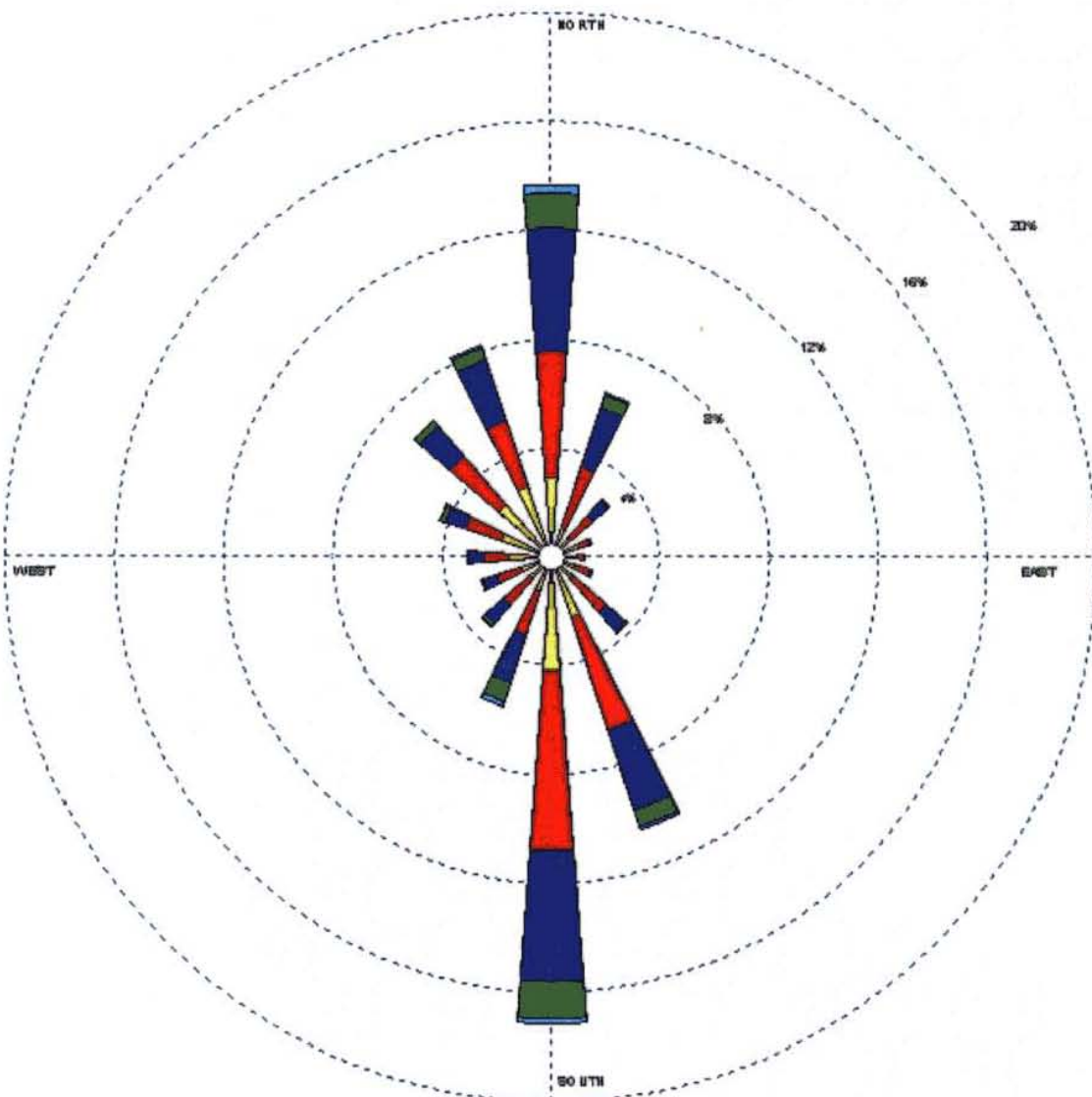
A note on the wind database: These wind roses are based on hourly data from the Solar and Meteorological Surface Observation Network (SAMSON) CDROM, available from the National Climatic Data Center (<http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwAW~MP~CD>). The period of record is for 1961-1990. SAMSON is a 3-volume CD-ROM set is divided geographically into regions: Eastern, Central, and Western U.S. It contains hourly solar radiation data along with selected meteorological elements for the period 1961-1990. It encompasses 237 NWS stations in the United States, plus offices in Guam and Puer Rico. The dataset includes both observational and modeled data. The hourly solar elements are: Extraterrestrial horizontal and extraterrestrial direct normal radiation; global, diffuse, and direct normal radiation. Meteorological elements are: Total and opaque sky cover, temperature and dew point, relative humidity, pressure, wind direction (true north) and speed, visibility, ceiling height, present weather, precipitable water, aerosol optical depth, snow depth, days since last snowfall, and hourly precipitation. Joint NCDC and NREL product. DOS only. SAMSON can be ordered from NCDC by clicking on the above link.


The hourly winds measured at airports are normally 2 or 3 minute averages of 3 or 5 second samples at the top of every hour. These are not gusts. Newer equipment, particularly the Automated Surface Observation System (ASOS) used at most locations since 1996 or so, automatically records these values from cup anemometer values. Older observations (generally prior to 1996) represent data recorded by personnel working at weather stations who manually observed wind speed and direction at the top of every hour, and made an estimation of hourly winds over some time period, typically 2 to 5 minutes in length.

For more information, contact Greg Johnson (gjohnson@wcc.nrcs.usda.gov)

WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK

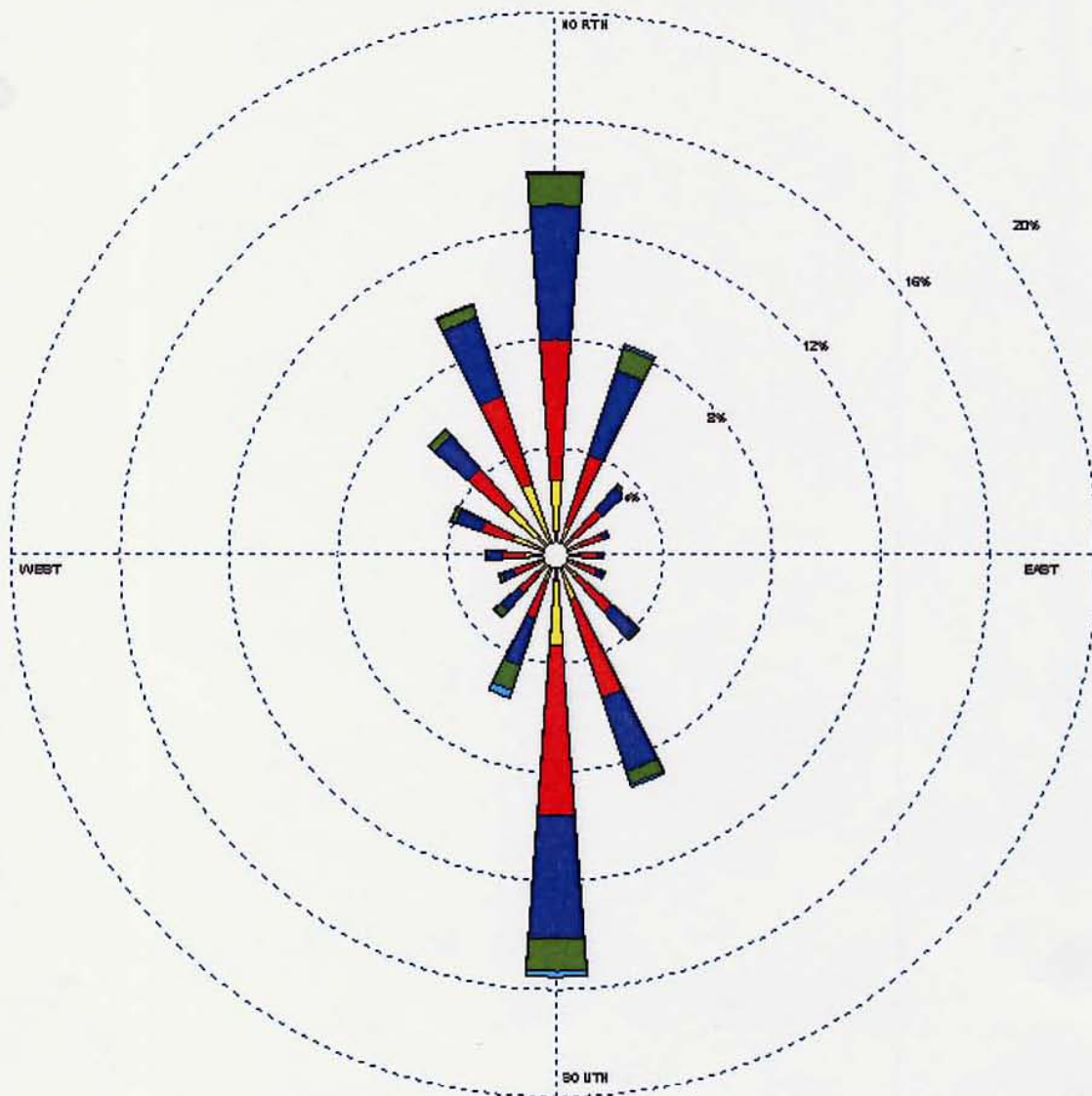



Wind Speed (m/s) 	MODELER	DATE	COMPANY NAME
	Sara West	8/28/2002	USDA-ARS
	DISPLAY	UNIT	COMMENTS
	Wind Speed	m/s	
	AVG. WIND SPEED	CALM WINDS	
	4.89 m/s	7.19%	
	ORIENTATION	PLOT YEAR-DATE-TIME	
	Direction (blowing from)	1981 Jan 1 - Jan 31 Midnight - 11 PM	

WPPC Dr. Plot 3.3 by Caldes Environmental Solutions - www.caldes-environmental.com

WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK

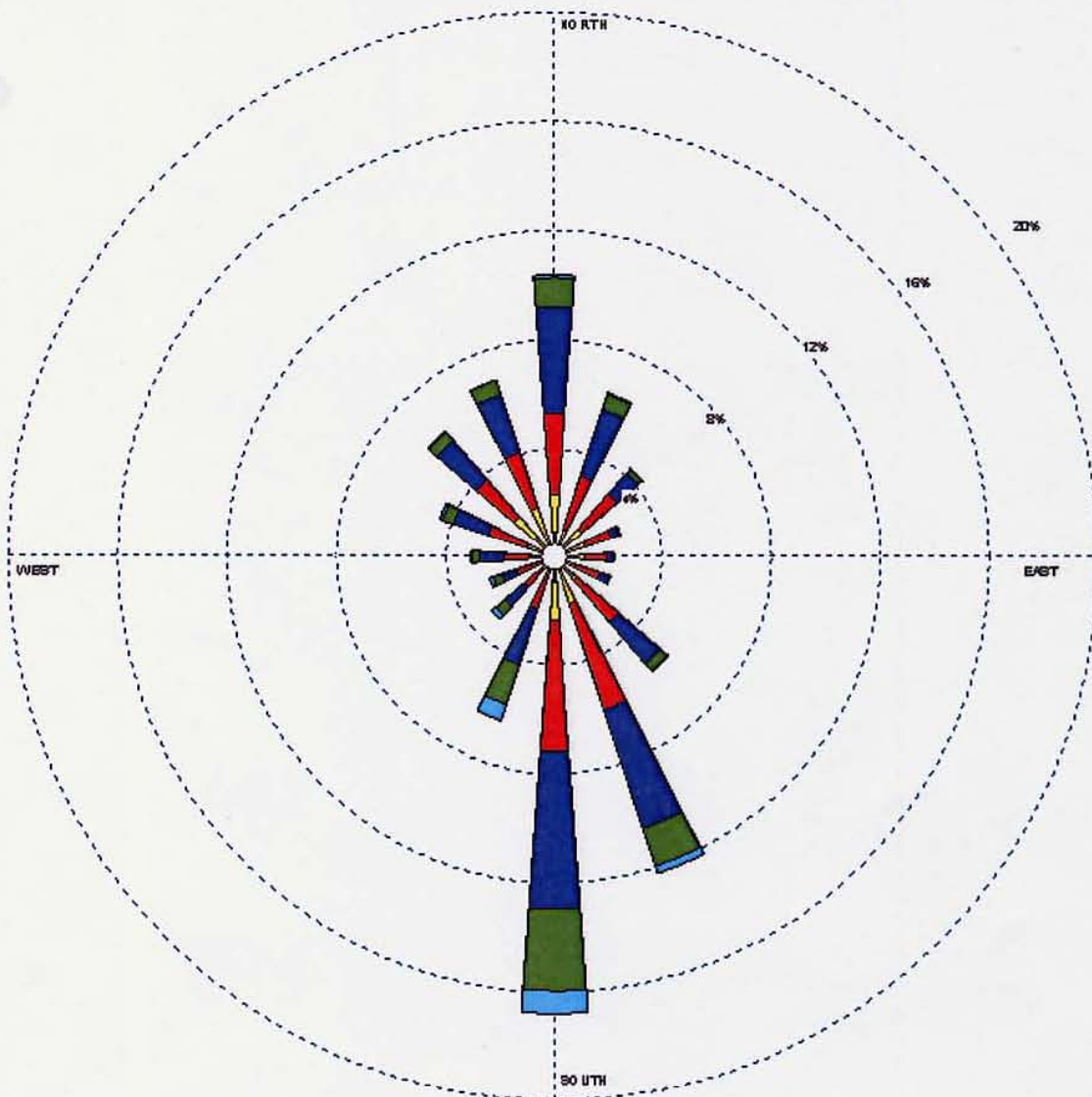



Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 5.07 m/s	CALC WINDS 5.99%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Feb 1 - Feb 29 Midnight - 11 PM	

WROPC Dr. v1.0.3 by Carlos Environmental Software - www.tulsa-windrose.com

WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK

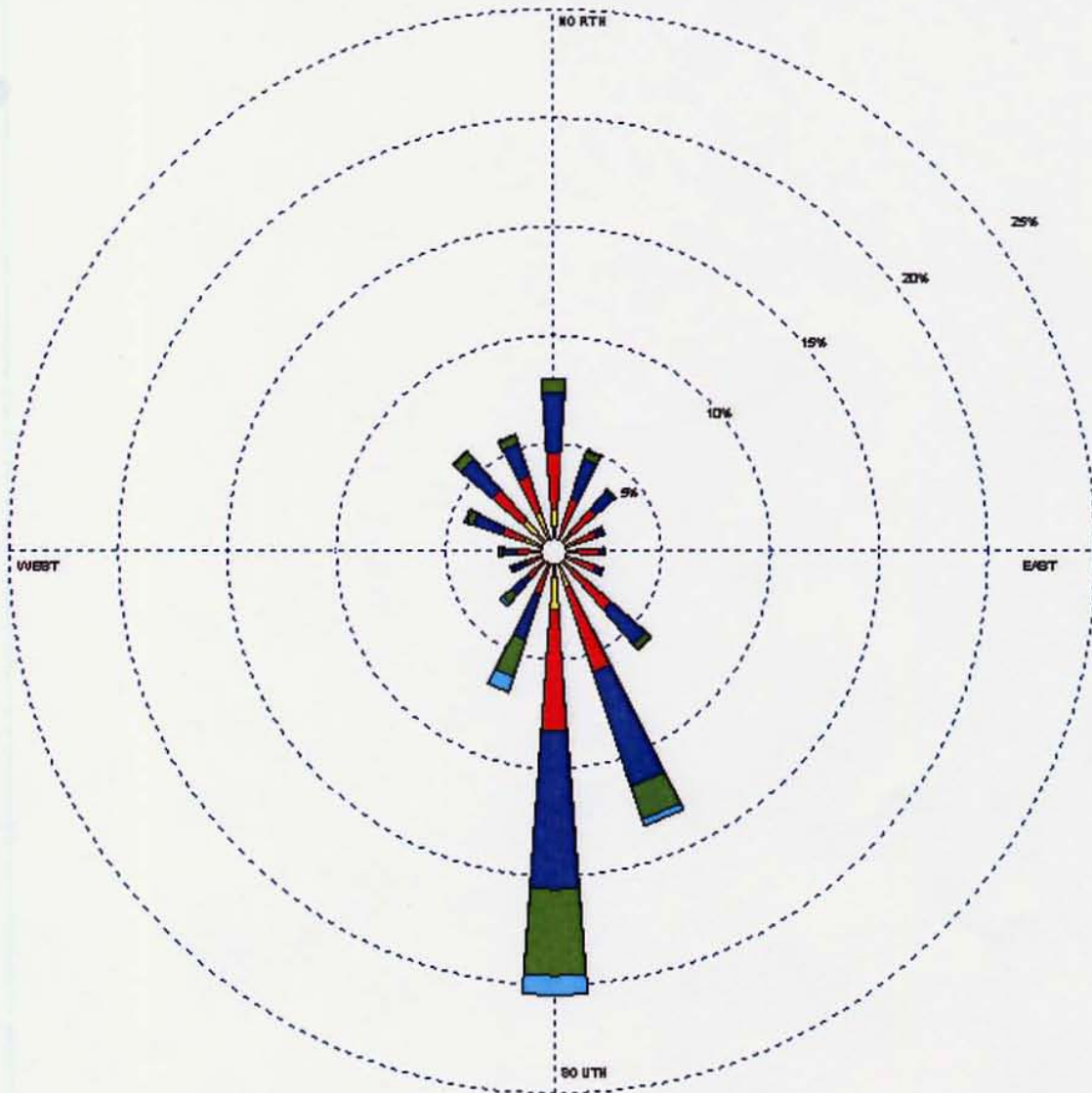


Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	Avg. WIND SPEED 5.59 m/s	CAUM WINDS 4.80%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Mar 1 - Mar 31 Midnight - 11 PM	

WSPC Draw 3.3 by Carlos Environmental Software - www.tulsa-carlos.com

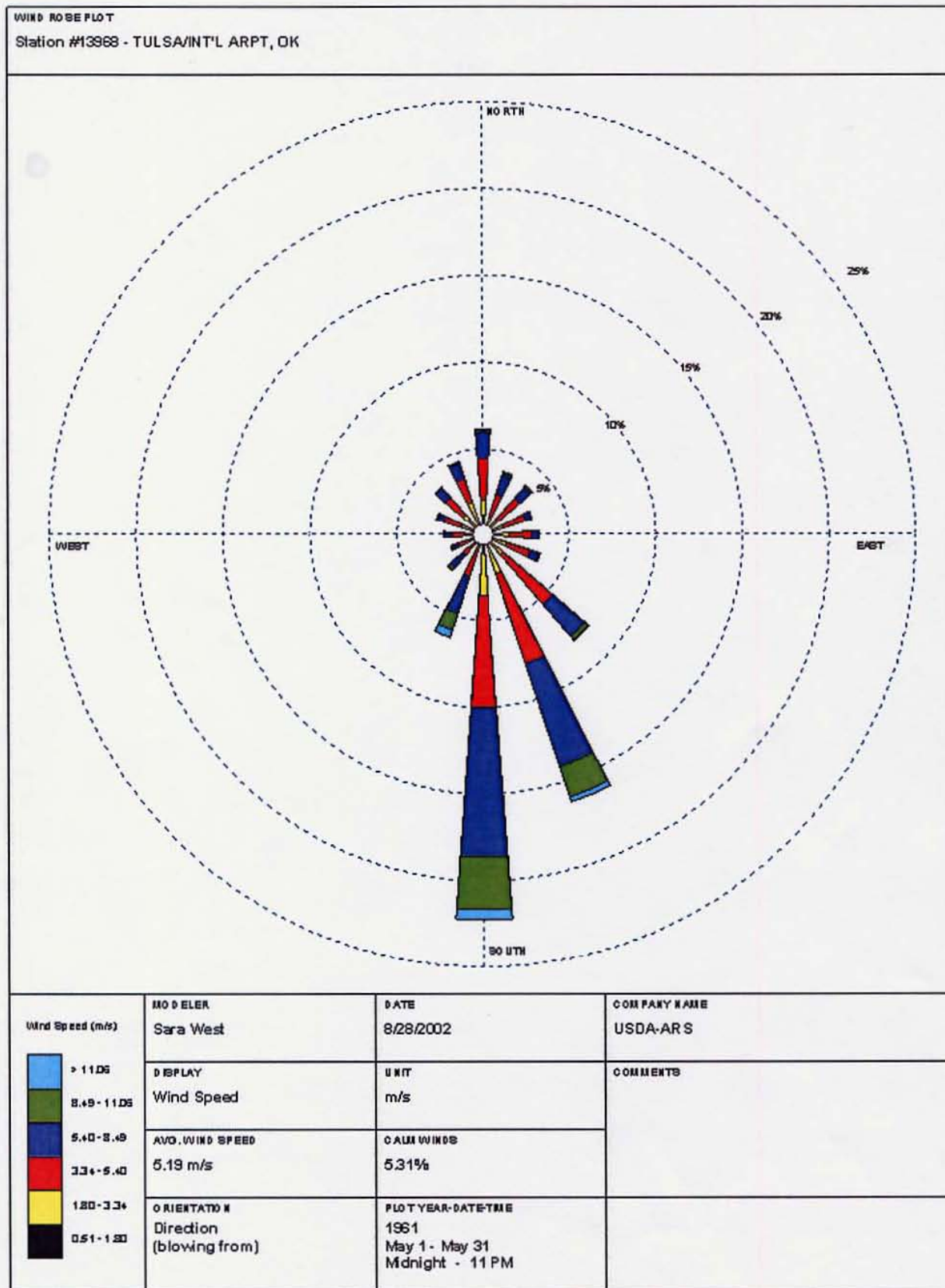
WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK



Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	Avg. WIND SPEED 5.63 m/s	CALM WINDS 5.07%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Apr 1 - Apr 30 Midnight - 11 PM	

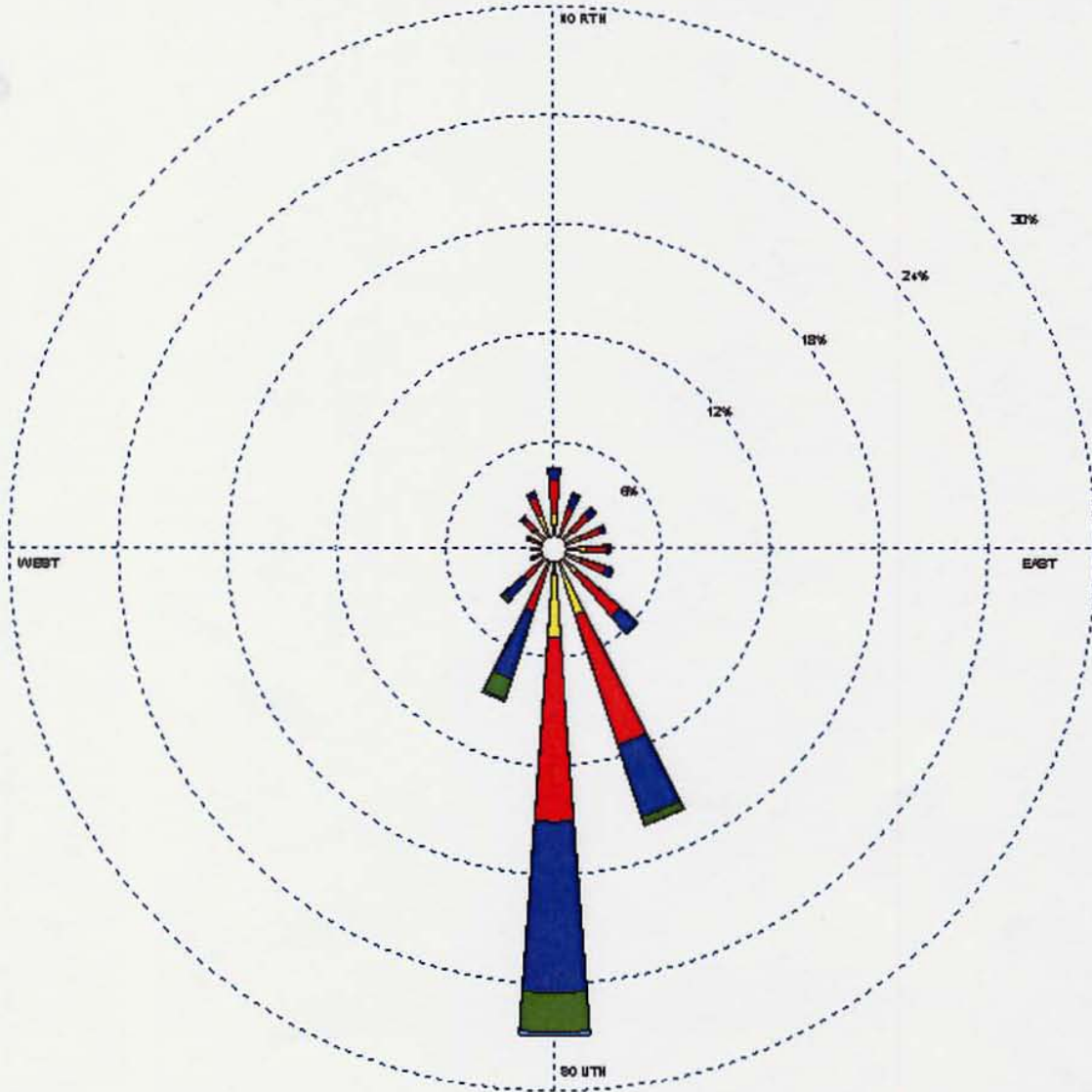
WPPC Dr. v1.0.3 by Carlos Environmental Software - www.carlos-environmental.com




WPPC Dr. View 3.3 by Climate Environmental Software - www.climate-software.com

WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK

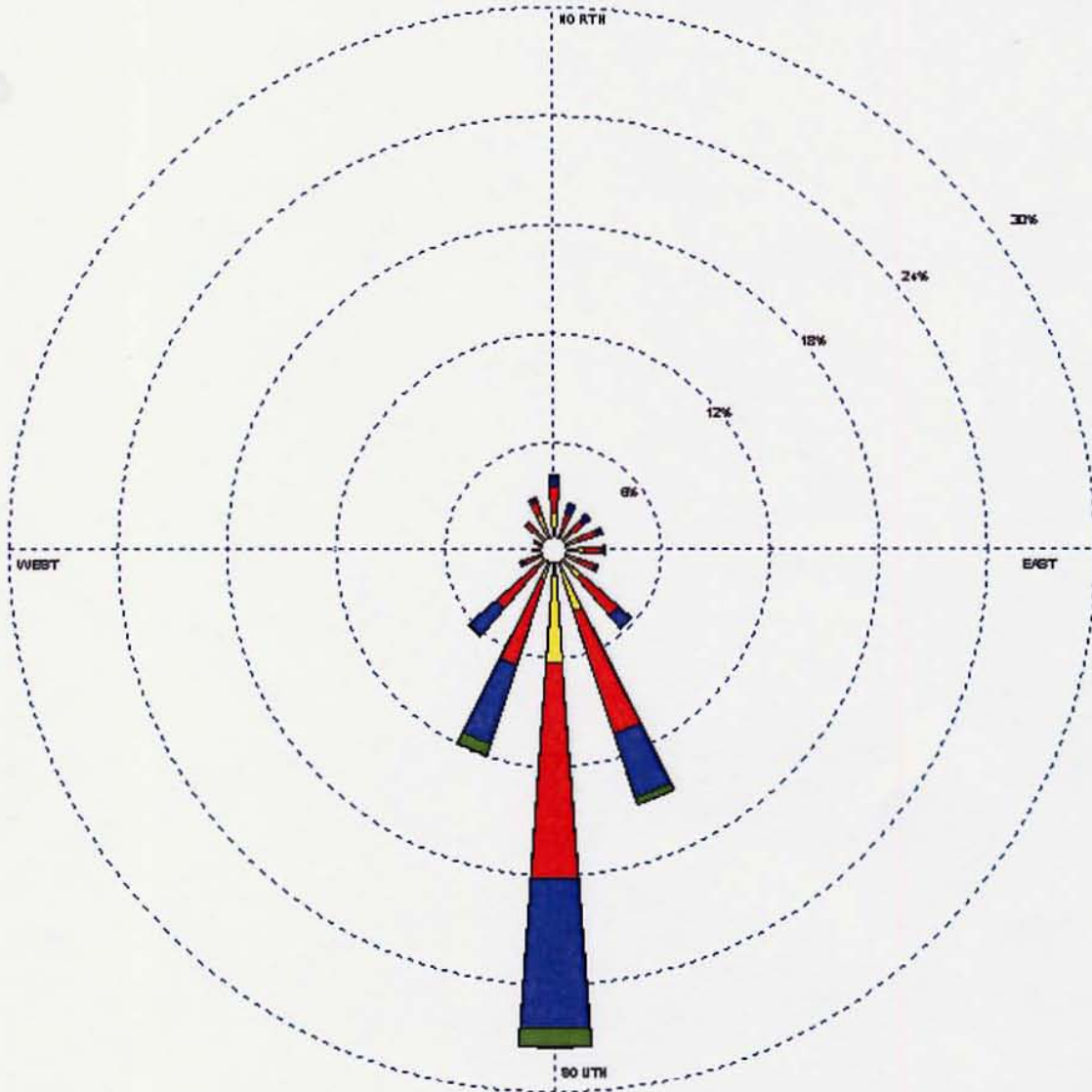


Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	Avg. WIND SPEED 4.73 m/s	CAUM WINDS 6.96%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Jun 1 - Jun 30 Midnight - 11 PM	

WSPC of v10e 3.3 by Caldes Environmental Software - www.tulsa-wind.com

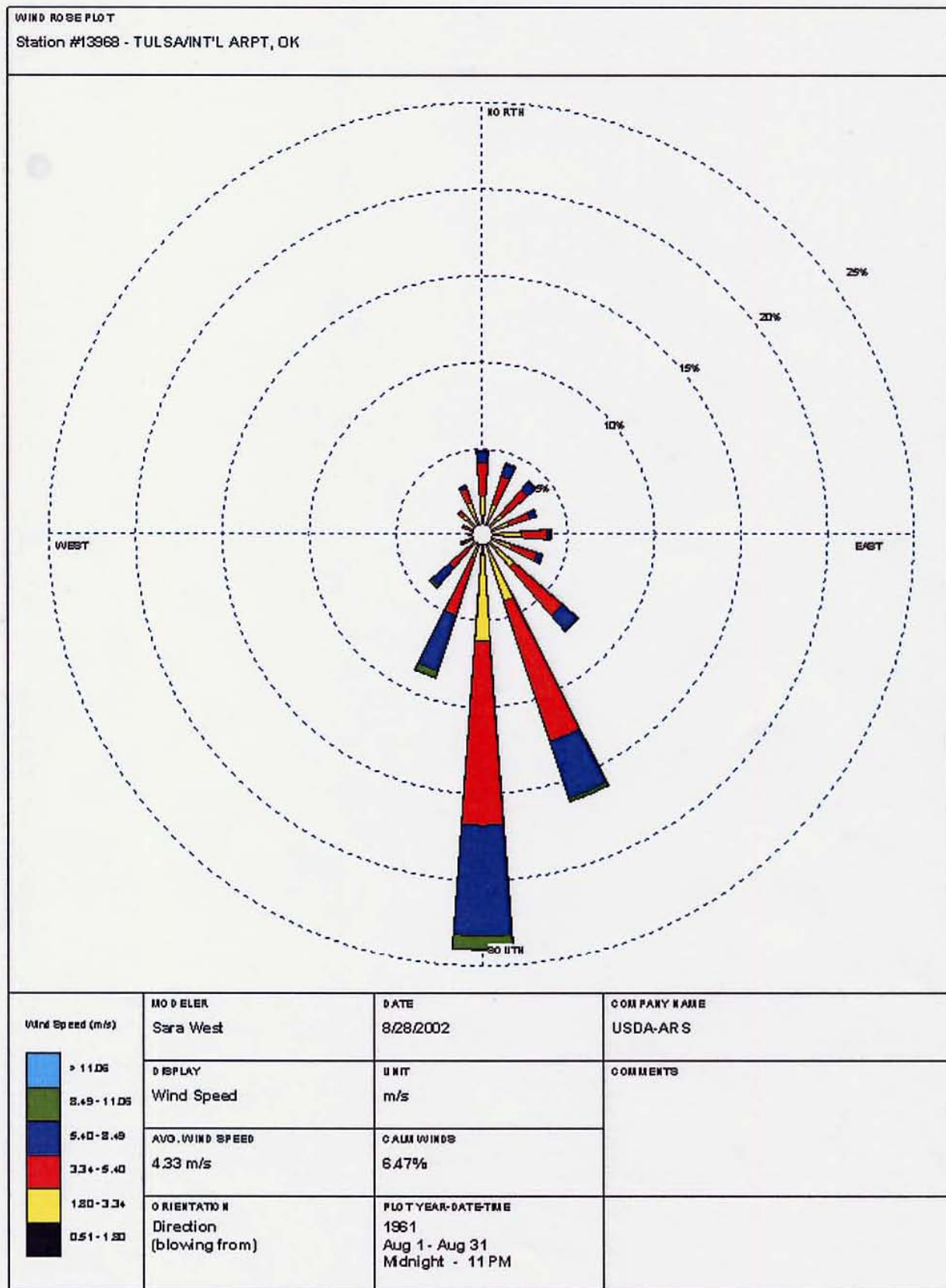
WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK



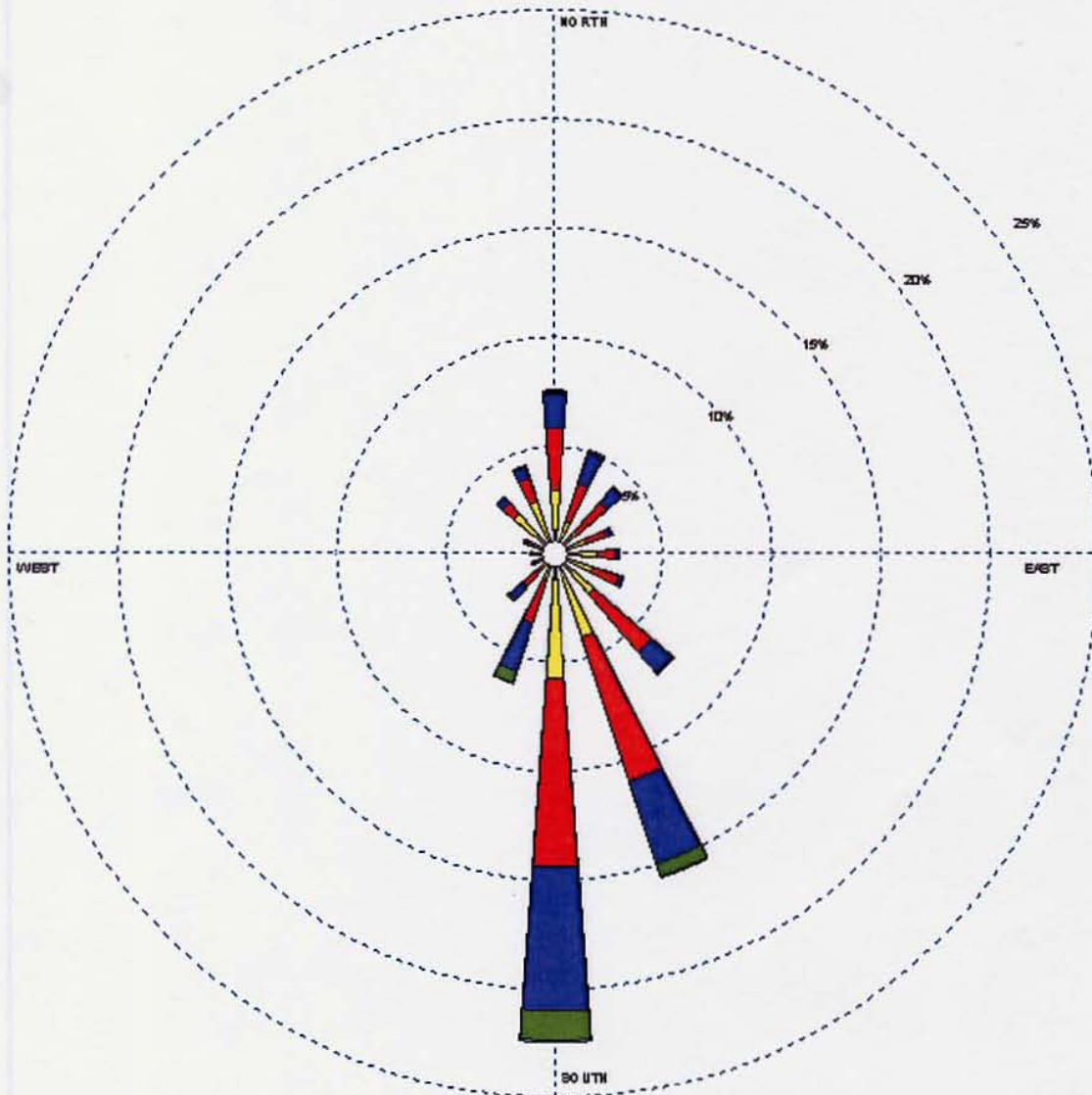
Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	Avg. WIND SPEED 4.50 m/s	CAUM WINDS 5.91%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE/TIME 1961 Jul 1 - Jul 31 Midnight - 11 PM	


WPPC 01 v10a 3.3 by Carlos Environmental Software - www.tulsa-windrose.com



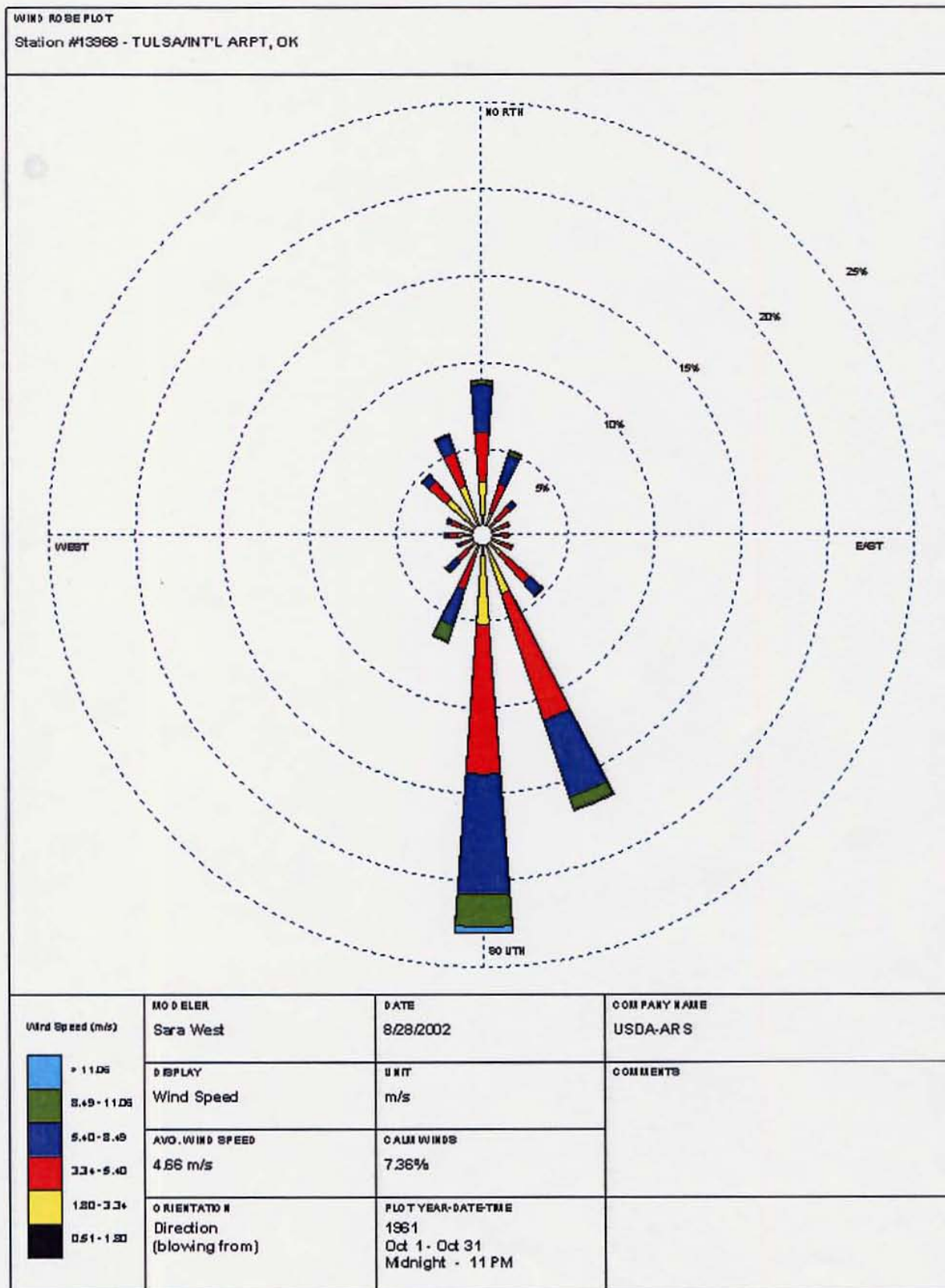
WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK



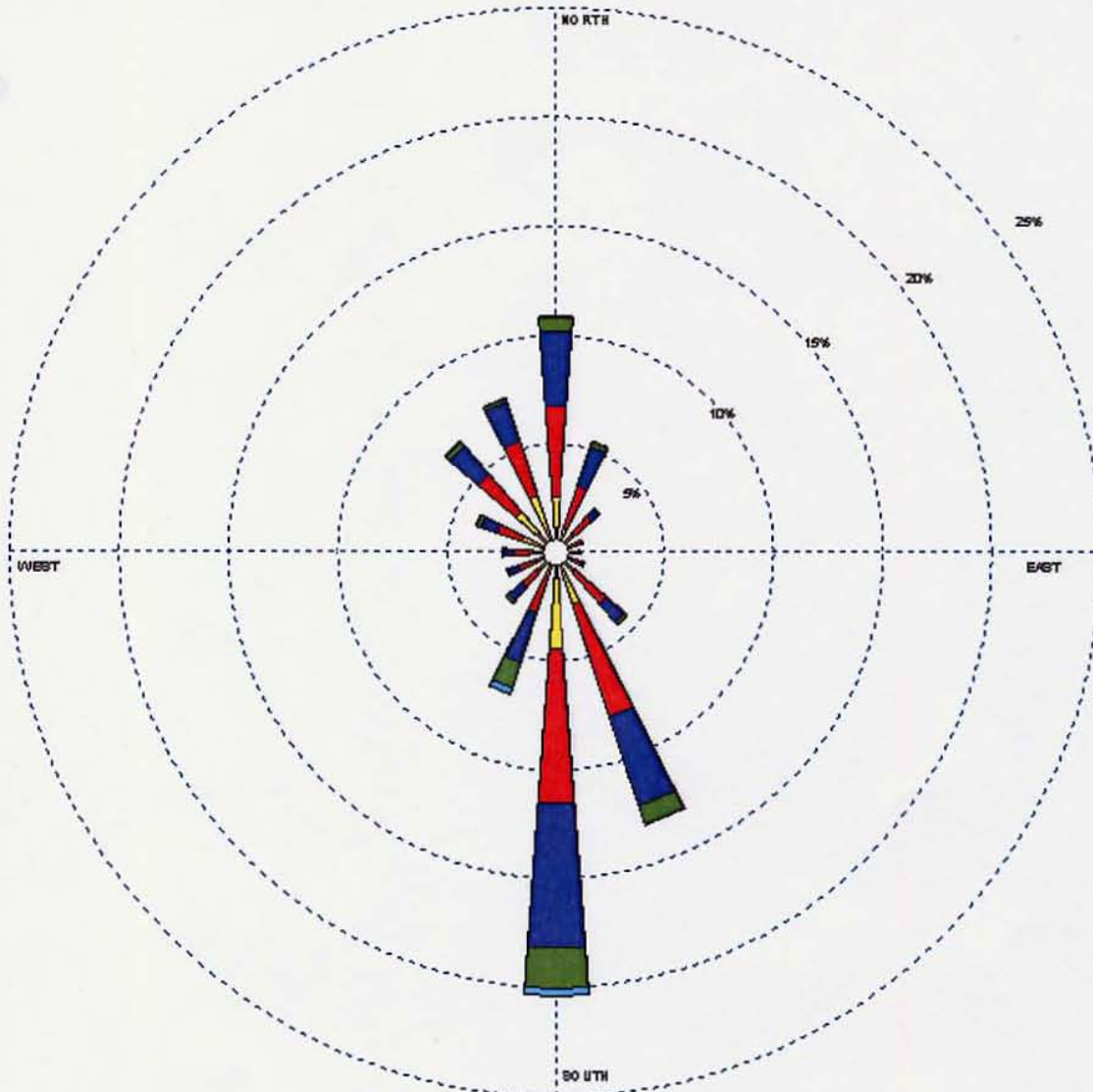
Wind Speed (m/s) 	MO D ELER Sara West	DATE 8/28/2002	COM PANY NAME USDA-ARS
	D ISPLAY Wind Speed	U NIT m/s	COMMENTS
	AVG. WIND SPEED 4.43 m/s	0 ALSE WINDS 7.69%	
	O RIENTATIO N Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Sep 1 - Sep 30 Midnight - 11 PM	


WPPC Dr. v1.0.3.3 by Carlos Environmental Software - www.carlos-environmental.com



WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK

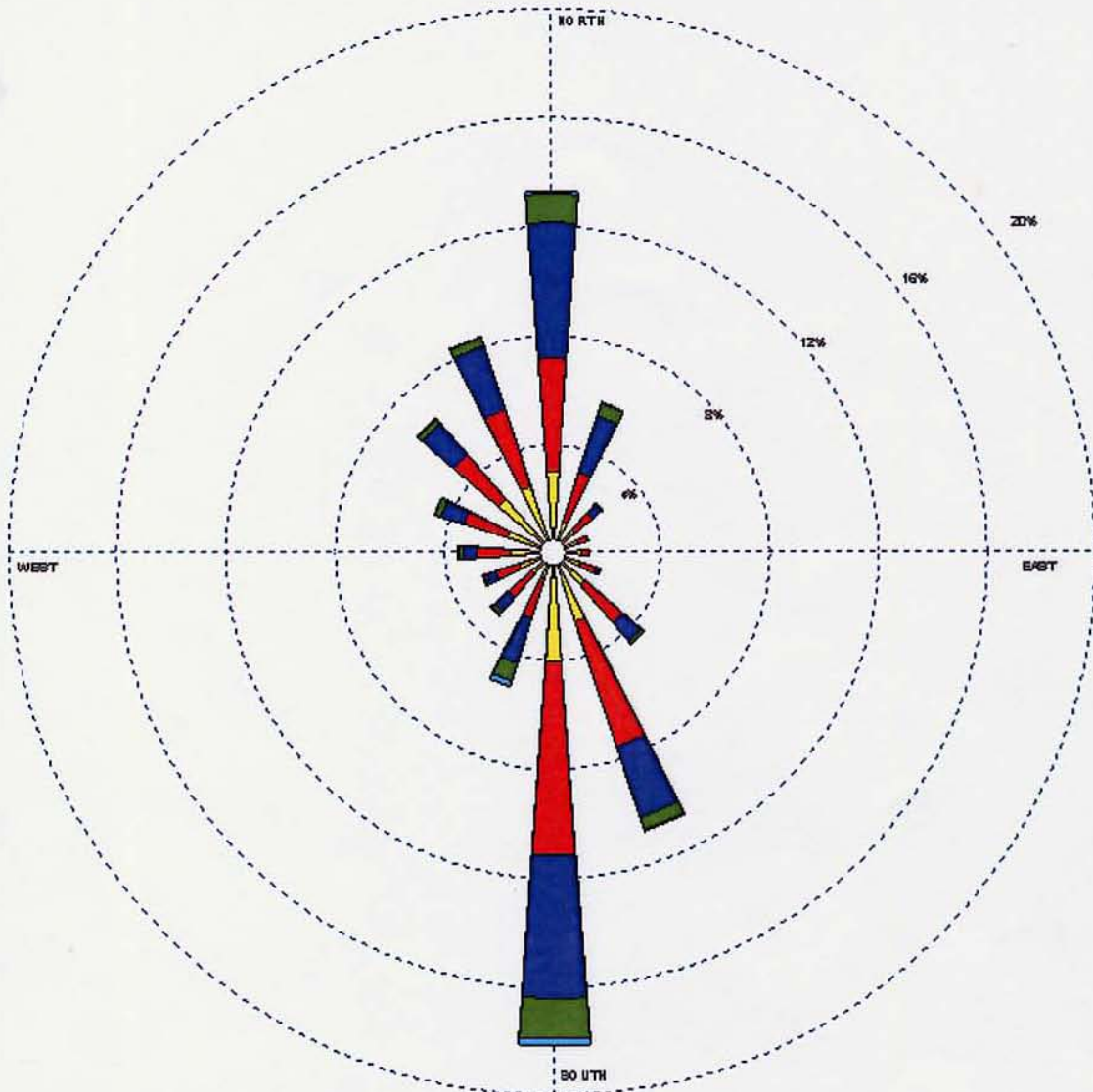


Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	AVG. WIND SPEED 4.98 m/s	CAUSE WINDS 6.21%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Nov 1 - Nov 30 Midnight - 11 PM	

WROPC Dr. v1.0.3 by Caltech Environmental Software - www.balco-environmental.com

WIND ROSE PLOT

Station #13968 - TULSA/INT'L ARPT, OK



Wind Speed (m/s) 	MODELER Sara West	DATE 8/28/2002	COMPANY NAME USDA-ARS
	DISPLAY Wind Speed	UNIT m/s	COMMENTS
	Avg. WIND SPEED 4.84 m/s	CALM WINDS 6.31%	
	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1961 Dec 1 - Dec 31 Midnight - 11 PM	

WPPC BY Ver 3.3 by Climate Environmental Software - www.climate-software.com

APPENDIX J

American Burying Beetle Survey



Eagle Environmental Consulting, Inc.

July 21, 2005

Mr. Tim Stecher
Project Manager
Burns & McDonnell
9400 Ward Parkway
Kansas City, Missouri 64114

Re: American Burying Beetle Survey


Dear Mr. Stecher:

Attached are two original captioned reports documenting and describing the recent American Burying Beetle (ABB) survey associated with the Tulsa Fuels Reclamation Project near Collinsville, Oklahoma. The referenced surveys were performed between July 10 and 13, 2005. The subject surveys were required based on consultation with the U.S. Fish and Wildlife Service however the consultation number is unknown.

One original report will be forwarded to the U.S. Fish and Wildlife Service per our permit requirements. No American Burying Beetles were collected during the three-night trapping session. Coordination with the USFWS office should complete your consultation in terms of threatened or endangered species.

We appreciate the opportunity to have provided these services. Please let me know if you have any questions or would like additional information. Thank you.

Sincerely,


Steven R. Votaw
President

Cc: Ms. Hayley Dikeman, USFWS

AMERICAN BURYING BEETLE SURVEY

Tulsa Fuels Reclamation Project
near
Collinsville, Tulsa County, Oklahoma

Prepared for:
Burns & McDonnell

Prepared by:



Eagle Environmental Consulting, Inc.
P.O. Box 780
Owasso, Oklahoma 74055
918-272-7656

July 2005

AMERICAN BURYING BEETLE SURVEY

Tulsa Fuels Reclamation Project
near
Collinsville, Tulsa County, Oklahoma

Prepared for:
Burns & McDonnell

Prepared by:



Eagle Environmental Consulting, Inc.
P.O. Box 780
Owasso, Oklahoma 74055
918-272-7656

July 2005



Steven R. Votaw
President

Table of Contents

I.	Introduction	1
II.	General Site Descriptions	1
III.	Sampling Methodology	2
IV.	Survey Findings	3
V.	Conclusion	3

References

Appendix A – Trap Line Location Map

Appendix B - Survey Data Forms

Appendix C - Selected Field Site Photographs

AMERICAN BURYING SURVEY

Tulsa Fuels Reclamation Project *near* **Collinsville, Tulsa County, Oklahoma**

I. Introduction

Eagle Environmental Consulting, Inc. conducted surveys for the American Burying Beetle (*Nicrophorus americanus*) (ABB) within the project area associated with the Tulsa Fuels reclamation site near Collinsville, Tulsa County, Oklahoma for Burns & McDowell. No ABB's were captured during the three-night survey effort.

The ABB has been a Federally-listed endangered species since 1989 and is also recognized as endangered by the Oklahoma Department of Wildlife Conservation. Based on the potential for impact to individuals of ABB, the survey effort was performed to ensure compliance with the Endangered Species Act of 1973 (16 U.S.C. 1539, et seq.) and the U.S. Fish and Wildlife Service Regulations (50 C.F.R. 17.22) under Endangered Species Act Section 10 Permit number TE043399-0.

The surveyed property was located near the intersection of 136th Street North and Garnett Avenue south of Collinsville, Oklahoma. The project is located in the Northwest ¼ of Section 32, Township 21 North, Range 14 East, Tulsa County, Oklahoma. The surveyed area can be found on the Collinsville USGS 7.5-Minute Quadrangle Map (Figure 1). The subject ABB survey was conducted between July 10 and June 13, 2005.

II. General Site Description

The subject parcel is situated in the northeastern portion of the Cross Timbers Ecoregion. Topography of the local is described as gently sloping hillsides, relatively level rangeland, and the associated lowlands of the Bird Creek watershed. These areas are comprised of gently rolling pastures, relatively level flood plains, and sporadic and irregularly shaped stands of oak woodland.

Primary land use in the general area surrounding project area is suburban development and cattle grazing. Existing habitat identified within the project area is described as disturbed exhibiting a dominance of non-native grasses and forbs. Forested areas are generally described as scattered early-successional woodlots dominated by eastern cottonwood, American elm, and persimmon. Soils associated with the project site were observed to be disturbed loams with a prominent remnant component of brick chards from an previously exiting smelter operation.

Woody vegetation consisted of American elm (*Ulmus americana*), sycamore (*Platanus occidentalis*), eastern cottonwood (*Populus deltoides*), northern catalpa (*Catalpa speciosa*), winged sumac (*Rhus copallinum*), black willow (*Salix nigra*), blackjack oak (*Quercus marilandica*), post oak (*Quercus stellata*), persimmon (*Diospyros virginiana*), and eastern red cedar (*Juniperus virginiana*). Herbaceous vegetation associated with the survey area included little bluestem (*Schizachyrium scoparium*), fescue (*Festuca sp.*), pigweed (*Portulaca oleracea*), Japanese brome (*Bromus japonicus*), and Bermudagrass (*Cynodon dactylon*).

III. Beetle Characteristics and Survey Methodology

The ABB is large (1-1.5 inches) and has a shiny black appearance with four orange-red spots on the wing covers (elytra). A large red spot on the pronotum of the beetle is indicative of the species. The habitat requirements for this beetle are not fully known; however, the ABB is considered a habitat generalist and is known to occupy a diverse range of habitats. Habitats associated with the ABB include open grasslands, forests, as well as transitional areas. The beetle is a carrion feeder and utilizes small vertebrate carcasses for food and reproductive purposes.

Site selection for trap line placement was selected to ensure a diversity of habitats was sampled. The ABB occurs in a variety of habitat types and will exploit virtually any possibilities where suitable forage and soil conditions may be found. In selecting trap line placement relative to habitat types, one trap line was placed southwest of the proposed construction site. The available habitat type was sampled using one (1) baited pit-fall trap line. The trap line location is graphically depicted at Appendix A.

Survey methods for the ABB were performed according to the American Burying Beetle *Nicrophorus Americanus* Survey Guidance In Oklahoma dated May 6, 2005. Pitfall traps, baited with putrid chicken gizzards, were placed in one (1) trap line containing eight individual pitfall traps spaced approximately 20 meters apart.

IV. Survey Effort Results

Atmospheric conditions during the ABB survey were fair with temperatures normal to slightly above normal and southwest wind ranging from calm to light and variable (0 to 8 mph). Nighttime temperatures reached the upper 60's to low 70's (°F) while daytime highs reached the mid 90's (°F). One trap line was deployed within the survey area to ensure adequate property coverage and minimize sampling bias to the extent practicable. The trap line was placed southwest of the construction site to utilize prevailing wind directions and maximize survey habitat diversity.

ABB surveys was completed after three nights of trapping. Several species of beetles (*Coleoptera*), ants (*Hymenoptera*), crickets (*Gryllidae*), arachnids, isopods, and various other insects and arthropods were collected. Multiple carrion beetle species identified as members of the family *Silphidae* were captured. No beetles identified as *Nicrophorus americanus* were collected during the survey. The field survey data forms are found at Appendix B. Selected project site photographs of the survey area are presented in Appendix C.

Results

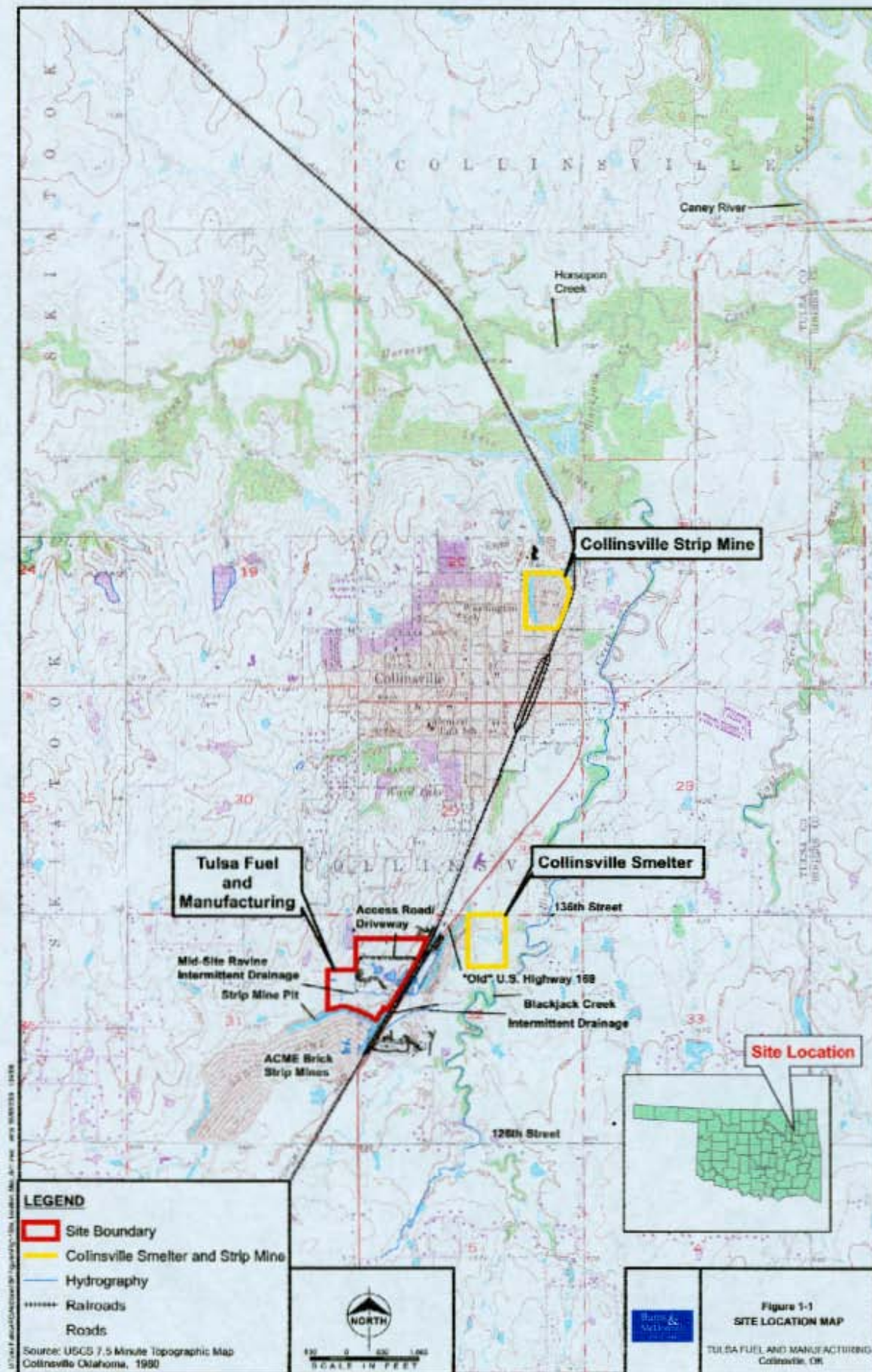
No beetles of the genus *Nicrophorus* were collected during the 3-night survey, however multiple individuals from the family *Silphidae* were collected. Trap vandalism was not significant and several species of *Coleoptera* were also captured along with various other beetles, insects, isopods, and arachnids.

V. Conclusion

Meteorological conditions during the survey were favorable for ABB activity. This survey was performed in an effort to identify the presence or absence American Burying Beetles at or near the subject area. No ABB's were collected however, the collection of multiple specimens of the family *Silphidae* along with other species of insects and arthropods during the survey indicates trapping efforts and techniques were adequate and functional.

References

- Creighton, J.C., M.V. Lomolino, and G.D. Schnell, Oklahoma Biological Survey, University of Oklahoma. Survey methods for the American Burying Beetle, *Nicrophorus americanus*, in Oklahoma and Arkansas. May 1993.
- Oklahoma Cooperative Extension Service, Oklahoma State University, Oklahoma Department of Conservation, U.S. Environmental Protection Agency, Oklahoma Department of Agriculture Plant Industries Division, Oklahoma Natural Heritage Inventory Program, U.S. Fish and Wildlife Service. Endangered and Threatened Species of Oklahoma. April 1993.
- USDA. Tulsa County Soil Survey
- USFWS. American Burying Beetle *Nicrophorus Americanus* Survey Guidance In Oklahoma. May 2005.
- USGS. 7.5-Minute Topographic Map



Appendix A

Trap Line Location Map

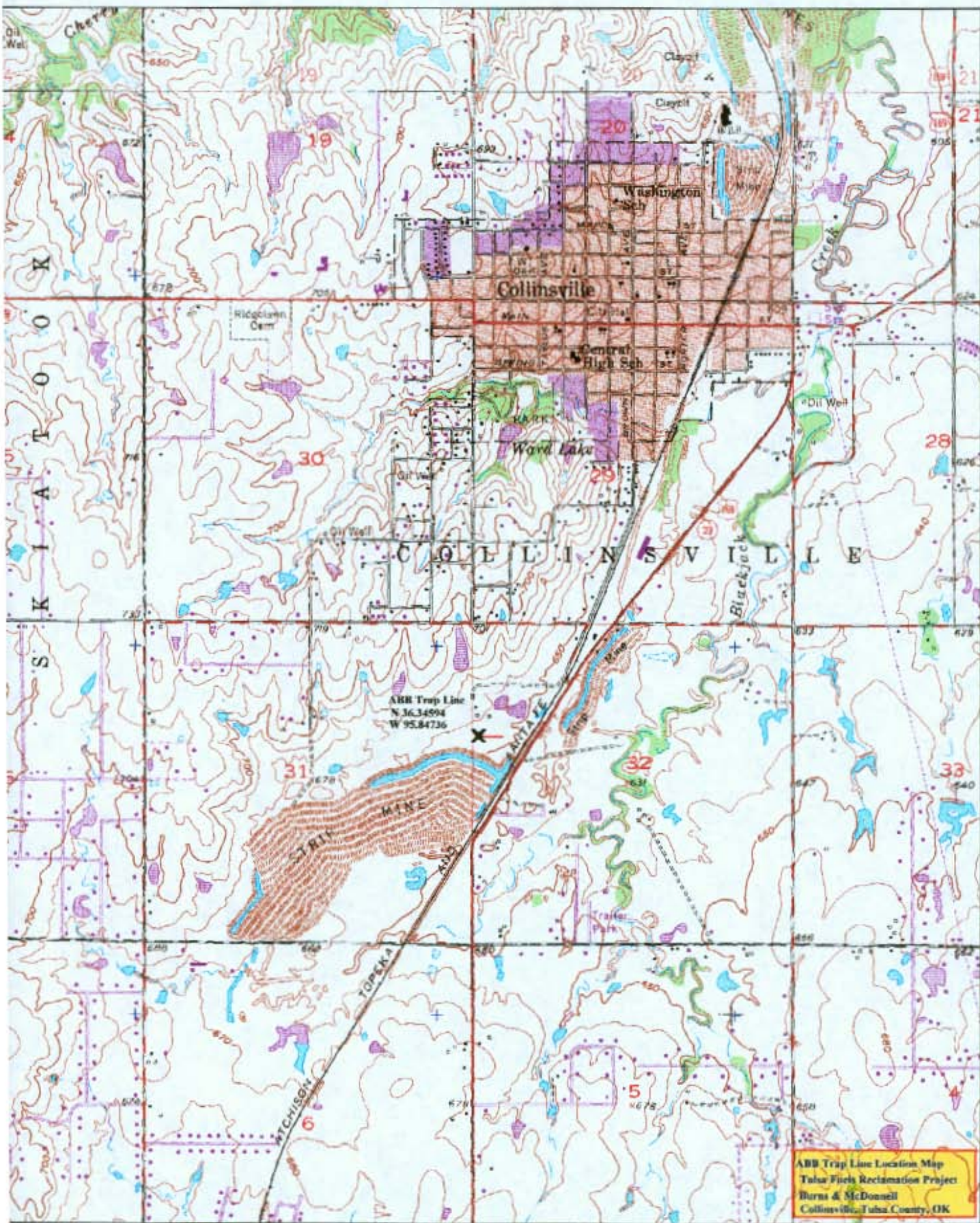


ABB Trap Line Location Map
Tulsa Field Reclamation Project
Burns & McDonnell
Collinsville, Tulsa County, OK

Appendix B

Survey Data Forms

[illegible]

American Burying Beetle Survey Data Sheet

Project: Tulsa Fuels Reclamation Site Temp: min 70 (F)
 Location: Collinsville, Tulsa County, OK max 94 (F)
 Surveyor: SRV/MLA
 Survey Night: 1 Wind: speed 5 (mph)
 Date: July 10, 2005 direction SW

Trap Findings:	Trap Number							
	1	2	3	4	5	6	7	8
Bait Present	•	•	•	•	•		•	•
Bait Gone-Trap Intact								
Bait Gone-Trap Dug Up						•		
<i>N. americanus</i>								
<i>N. orbicollis</i>								
<i>N. tomentosus</i>								
<i>N. marginatus</i>								
<i>N. pustulatus</i>								
<i>N. carolinus</i>								
<i>N. sayi</i>								
Various Insects	•	•	•	•	•		•	•
Other								

Number of <i>N. americanus</i> :								
Male								
Female								
Old								
New								
Unknown								
Newly Marked Males								
Newly Marked Females								
Recapture								

Comments: Trap-line #1

American Burying Beetle Survey Data Sheet

Project: Tulsa Fuels Reclamation Site Temp: min 68 (F)
 Location: Collinsville, Tulsa County, OK max 91 (F)
 Surveyor: SRV/MLA
 Survey Night: 2 Wind: speed 8 (mph)
 Date: July 11, 2005 direction SW

Trap Findings:	Trap Number							
	1	2	3	4	5	6	7	8
Bait Present	•	•	•	•	•		•	•
Bait Gone-Trap Intact								
Bait Gone-Trap Dug Up						•		
<i>N. americanus</i>								
<i>N. orbicollis</i>								
<i>N. tomentosus</i>								
<i>N. marginatus</i>								
<i>N. pustulatus</i>								
<i>N. carolinus</i>								
<i>N. sayi</i>								
Various Insects	•		•	•	•		•	•
Other								

Number of <i>N. americanus</i> :								
Male								
Female								
Old								
New								
Unknown								
Newly Marked Males								
Newly Marked Females								
Recapture								

Comments: Trap-line #1

American Burying Beetle Survey Data Sheet

Project: Tulsa Fuels Reclamation Site Temp: min 71 (F)
 Location: Collinsville, Tulsa County, OK max 94 (F)
 Surveyor: SRV/MLA
 Survey Night: 3 Wind: speed 5 (mph)
 Date: July 12, 2005 direction SW

Trap Findings:	Trap Number							
	1	2	3	4	5	6	7	8
Bait Present	•	•	•	•		•	•	•
Bait Gone-Trap Intact								
Bait Gone-Trap Dug Up					•			
<i>N. americanus</i>								
<i>N. orbicollis</i>								
<i>N. tomentosus</i>								
<i>N. marginatus</i>								
<i>N. pustulatus</i>								
<i>N. carolinus</i>								
<i>N. sayi</i>								
Various Insects	•	•	•	•		•	•	•
Other								

Number of <i>N. americanus</i> :								
Male								
Female								
Old								
New								
Unknown								
Newly Marked Males								
Newly Marked Females								
Recapture								

Comments: Trap-line #1

Appendix C

Selected Field Site Photographs



Trap Line #1 Habitat; East View



Trap Line #1 Habitat; West View



Baited Pitfall Trap

APPENDIX K

**Analytical Data
(Submitted on CD)**

**Oklahoma SEL
RI Phase I Data**

Oklahoma SEL

Analytical Data

RI Phase I

STATE ENVIRONMENTAL LABORATORY

DATA PACKAGE NARRATIVE

PROJECT NAME

Tulsa Fuel - Phase I

SEL SECTION REPORTING

General Chemistry/Metals

The narrative and indicated attachments apply to the following SEL samples.

TF-SED samples were submitted July 19, 2005 through September 29, 2005. The sample ranges are 378867-384386.

TF-LIQ samples were submitted July 19, 2005 through October 3, 2005. The sample ranges are 378844-384442.

To match project site identifiers with SEL sample numbers; please see the sample tracking tables that were sent with the January 8, 2006 EDD.

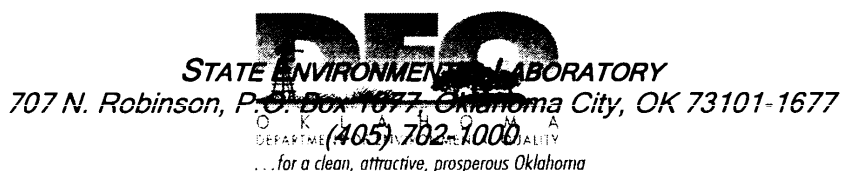
PACKAGE ATTACHMENTS

1. Copy of the corresponding chain of custody form(s)
2. Final analytical reports
3. Indicated quality control:

QUALITY CONTROL

GENERAL CHEMISTRY/METALS	
<input checked="" type="checkbox"/>	6010 - Metals by ICP/AES, TCLP - Metals 6200 - Metals by XRF
<input checked="" type="checkbox"/>	Blanks summary- Continuing cals. (CCB) & reagent (LRB)
<input checked="" type="checkbox"/>	Laboratory control sample summary - LCS
<input checked="" type="checkbox"/>	Calibration verification checks
<input checked="" type="checkbox"/>	Fortified blank (LFB) & spikes summary (MS/MSD)

4. August 19, 2005 Memorandum to Project Manager George Thomas



STATE ENVIRONMENTAL LABORATORY

DATA PACKAGE NARRATIVE

COMMENTS

As a result of the manner in which Weeks one through three samples were logged in, it may not be possible to accurately evaluate QA/QC for MS and MSD designated samples. Reference the attached August 19, 2005 Memorandum to George Thomas for additional information relative to this issue.

All ICP/6010 preparations (digestions) for total metals were made using the same dried aliquots used for XRF analysis. Therefore, it is not necessary to apply any type of moisture correction to the reported results for total metals. The % Solid data is provided only as a reference to the sample type and matrix. Reference the attached August 19, 2005 Memorandum to George Thomas for additional information relative to this issue.

Generally speaking, the majority of TF-SED samples were analyzed in batches that overlap field-sampling events.

XRF analysis required 23 instrument batches.

ICP analysis was completed in 6 instrument batches.

TCLP analysis was completed in 2 instrument batches.

The summary reports for each QC marker correspond to these analytical batches.

Accutrace ICP Calibration Standards (element / lot # / expiration date)

As	B2065015	April 2007
Cd	B2125005	April 2007
Pb	B1075029	April 2007
Zn	B2115031	April 2007


XRF Standard Reference Material

NIST 2710

NIST 2711

The release of the data contained in this hardcopy data package has been authorized by the SEL Section Programs Manager or designate as verified by the following signature.

Signature


Environmental Programs Manager

Date

Jan 13, 2006

DEQ
STATE ENVIRONMENTAL LABORATORY
707 N. Robinson, P.O. Box 1077, Oklahoma City, OK 73101-1677
O K (405) 702-9000
DEPARTMENT OF ENVIRONMENTAL QUALITY

MEMORANDUM

DATE: 19 August 2005
TO: George Thomas, Tulsa Fuel Project Manager, Land Protection
THROUGH: Chris Armstrong, SEL Director, Customer Services
CC: Kelly Dixon, Superfund Site Remediation Program Manager, Land Protection
Jeff Franklin, General Chemistry/Metals Section Manager, Customer Services
Andrea Newberry, Sample Management Unit Officer, Customer Services
FROM: Susan R. Elmenhorst, SEL Quality Assurance Officer, Customer Services
SUBJECT: Tulsa Fuel Project, Request for Laboratory QC and SEL Comments

In follow up to planning meetings held with the DEQ Project Manager, the review of volumes I and II of the Tulsa Fuel project *RI/FS-Sampling and Analysis Plan (Draft)*, and receipt of initial samples, the ODEQ State Environmental Laboratory (SEL) has compiled a list of comments. These comments are items we feel should be rectified or clarified prior to delivery of data for validation in order to facilitate the successful completion of the documented project data quality objectives.

I. Quality Assurance Project Plan Comments

3.5.1.2 MS/MSD Samples (Precision), pg. 3-10

“.....The project goal is to collect a minimum of five percent MS and MSD samples during the sampling event with emphasis on collecting MS/MSDs for each unique matrix. The laboratory will spike the MS and MSD samples with known concentrations of target analytes prior to analysis.”

Comment: Table 4-2 of the project FSP, *Summary of On-Site Soil Samples*, states the laboratory may substitute duplicate analysis in lieu of MS/MSD (MS/MSD footnote). For purposes of assessing method precision the SEL will perform a matrix duplicate (D) analysis on the designated XRF sample but is unable to perform the requested matrix spike (MS) or MSD due to the sample preparation requirements for XRF analysis (homogenized dry soils).

3.5.2.2 Spike Recovery Studies, MS/MSD (Accuracy), pg. 3-15

“.....The purpose of the MS/MSD is to determine analytical performance in the presence of any sample matrix interference.”

Comment: The analytical request on the submitted chain-of-custody indicates some samples selected for lab XRF analysis and the subsequent performance of an XRF determined MS/MSD. EPA Method 6200 QC does not include use of matrix spikes due to the sample preparation technique. The lab recommends the validator review the associated batch calibration verification quality control samples (ICV/CCV) for purposes of assessing XRF method bias.

Lack of matrix spike results will preclude XRF data validation for matrix bias, making the project QA objectives defined in QAPP Section 3.5 unachievable. An alternative practice to assess matrix effect bias may be accomplished via MS/MSD determinations conducted on the samples selected for ICP (EPA Method 6010) confirmation. If assessment of matrix bias is critical to the project success, it is recommended these samples be analyzed for MS/MSD quality control in addition to simply confirming the XRF sample data.

II. Additional Comments

1. The EPA Method 6200 XRF procedure uses a sample preparation process of drying and homogenizing the soil/sediment sample prior to XRF analysis. This procedure is designed to eliminate or limit the effect of moisture and non-homogeneous soil samples on XRF results. As indicated in the method, a portion of this XRF prepared sample will be analyzed as the ICP confirmatory sample analyses to further minimize variation.
2. Metals data will be reported on a "dry weight" basis. Percent solids determinations will be conducted and reported for the soils/sediment samples requiring ICP confirmation. Note, however, that both the XRF and ICP (6010) confirmatory analysis data are generated from prepared (dried) sample. Therefore, "corrections for moisture" are not conducted.
3. All water/liquid samples for metals analysis will be analyzed by EPA Method 200.7 as is the routine SEL method for this type of sample matrix.
4. Due to weekly variations of the sampler requested QC on sample chain-of-custodies (COC), the hard copy QC deliverables discussed during project planning meetings will not be fulfilled consistently. The tables below summarize laboratory QC that will be performed to best meet QC requested by the sampler.

Sampling Week	SEL Sample #s	Site ID	Matrix	Comments
Week 1	378853-378855	PDI-02/SW01	Liquid	Samples received and logged in as 3 SEL sample #s. MS/MSD will be performed on the first sample in the site series only. Samples results but not QC will be provided for 378854 and 378855.
	378863-378865	OFF-01/SW01	Liquid	As above.
	378882-378884	PD1-02/SD01	Sed/Soil	A matrix duplicate will be performed for each sample for XRF analysis. Matrix spiking is not performed for XRF analyses. A matrix spike with hardcopy QC will be provided for each sample for TCLP. However, hardcopy spike RPD precision calculations cannot be provided.
	378885-378887	PD1-02/SD01CF	Sed/Soil	A matrix spike with hardcopy QC will be provided for each sample for ICP confirmatory analysis. However, hardcopy spike precision RPD calculations cannot be provided.

	378897-378899	OFF-04/SD01	Sed/Soil	A matrix duplicate will be performed on each sample. However, hardcopy spike precision RPD calculations cannot be provided.
--	---------------	-------------	----------	---

A meeting was held 7/22/05, between the Project Manager, the SEL Manager, and the SEL QA Officer to discuss the problems encountered by the laboratory in an effort to rectify the requested Week 1 QC from the submitted COC and those discussed during initial project planning meetings.

Sampling Week	SEL Sample #s	Site ID	Matrix	Comments
Week 2	379571	TR-03 SS/02	Sed/Soil	A matrix duplicate will be performed for XRF analysis. MS/MSD is not performed for XRF.
	379600	TR-13/SS03	Sed/Soil	A matrix duplicate will be performed for XRF analysis. MS/MSD is not performed for XRF.

Sampling Week	SEL Sample #s	Site ID	Matrix	Comments
Week 3	380099	SP-40/SS02	Sed/Soil	A matrix duplicate will be performed for XRF analysis. MS/MSD is not performed for XRF.
	380103	SP-47/SS02	Sed/Soil	As above.
	380117	SP-01/SS03	Sed/Soil	As above.
	380137	TR-20/SS3	Sed/Soil	As above.
	380156	SP-20/SS01	Sed/Soil	As above.
	380160	SP-26/SS02	Sed/Soil	As above.
	380205	SP-11/SS03	Sed/Soil	As above.
	380251	SP-33/SS01	Sed/Soil	As above.

To address the variations on the Weeks 1-3 sample chain-of-custodies (COC) it is recommended the Project Manager confer with the General Chemistry/Metals Section Manager to review the QC requests for the soil/sediment samples already received. If changes are required, such as additional QC to meet the 5% MS/MSD frequency requirement, a documented notice needs to be prepared by the Project Manager and forwarded to Chris Armstrong. This information would need to be provided by no later than August 23rd, to prevent unnecessary sample reanalysis.

The lack of a written response by the 23rd, will indicate that you do not request any analytical changes.

If you have any questions or wish to discuss this further, please contact Chris Armstrong, SEL Director, (405) 702-1018 or Susan Elmenhorst, SEL QA Officer, (405) 702-1038 at the DEQ State Environmental Laboratory to schedule a meeting.

TFM (36478)
ccresp.**Lawrence, Shauna**

From: Mensik, Susan [Susan.Mensik@deq.state.ok.us]
Sent: Friday, March 10, 2006 1:55 PM
To: Shelton, Sharon
Cc: Franklin, Jeff; Thomas, George; Lawrence, Shauna
Subject: RE: TFM Question on MS/MSD for SEL

Not a problem Sharon. I apologize for any delay in communications on my end as I have been out of the office on family leave.

To answer your questions.....

Yes, both the spike and the sample concentrations are the units of ppb. There is a typo in the COMMENTS box regarding "the actual instrument read(measurement)" being in ppm. The QC results are calculated from the analyzed sample aliquot results. Final sample results then undergo the correction (*200) for the sample aliquot used in the digestion before being finally reported in units of mg/kg.

Spike Calculation- I spoke with the Metals section Manager. The spike recovery calculation is ((MS result-Sample Conc.)/LFB Result)*100. The LFB is spiked at the analyte concentration listed on the report. Analysis by ICP instrumentation requires background correction for sample values which is accomplished using reagent blank adjusted LFB results. Contact me if you require anything additional.

From: Shelton, Sharon [mailto:sshelton@burnsmcd.com]
Sent: Wednesday, March 08, 2006 9:19 AM
To: Mensik, Susan
Subject: TFM Question on MS/MSD for SEL

Susan –

I apologize. I was using your maiden name. Please see following message that I sent to George Thomas at DEQ on Monday, 3/6/05.

Sharon

George –

BMCD is working through the validation of the TFM soil and sediment data, and needed some additional clarification from SEL. The attached file contains one of the ICP Quality Control Reports for the project as an example. Can the SEL verify the following information for BMCD:

Spike Conc. is reported in ppb
Sample Conc. is reported in ppb

Additionally, we're having trouble duplicating the MS % Rec and MSD % Rec calculations. Can the lab provide the formula that is being used for the calculation? It's unclear to me if BMCD is using the correct formula to spot check the calculations.

I've included both Jeff Franklin and Susan Elmenhorst on the email since they have been involved in previous email exchanges. Please also include Shauna Lawrence (slawrence@burnsmcd.com) in any response. She's working through the soil/sediment validation.

3/14/2006

TFM-0001917

Thanks in advance for the assistance. Please call me (816-822-3168) or Shauna (816-333-9400, ext.2645) if SEL has any questions.

Sharon

Sharon Shelton
Project Chemist
Burns & McDonnell
Phone 816-822-3168
Fax 816-822-3494
Email sshelton@burnsmcd.com

3/14/2006

TFM-0001918

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # 381331
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec ¹	MSD Result	MSD %Rec ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2980	99.3	85 - 115	0	2980	100.0	2980	100.0	100.0	75 - 125	0.0	20%
Cadmium	300	319	106.3	85 - 115	0	298	93.4	301	94.4	93.9	75 - 125	1.0	20%
Lead	2000	2090	104.5	85 - 115	0	1920	91.9	1950	93.3	92.6	75 - 125	1.6	20%
Zinc	1000	1000	100.0	85 - 115	0	983	98.3	996	99.6	99.0	75 - 125	1.3	20%

↑

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

Is Calculation for recovery =
$$\frac{\text{MS Result} - \text{Sample Conc.}}{\text{Spike Conc.}} \times 100$$

Using this formula yields following

	MS % Rec	MSD % Rec
As	99.3	99.3
Cd	99.3	100
Pb	96.0	97.5
Zn	98.3	99.6

Do not match above?
Is a different calculation being used?

Sample Number: 381331
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1105
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		18.0	MG/KG	12/09/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium, Sediment	<	1.00	MG/KG	12/09/05	6010
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Lead, Sediment		40.0	MG/KG	12/09/05	6010
Zinc, XRF		84.0	MG/KG	11/23/05	6200
Zinc, Sediment		72.0	MG/KG	12/09/05	6010
Lead (TCPLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium (TCPLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCPLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

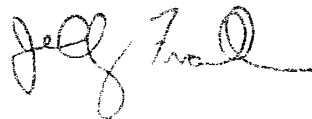
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS04; USE FOR MS/MSD & CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST



*

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # **381344**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec.	MSD Result	MSD %Rec.	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2980	99.3	85 - 115	0	3090	103.7	3150	105.7	104.7	75 - 125	1.9	20%
Cadmium	300	319	106.3	85 - 115	0	314	98.4	323	101.3	99.8	75 - 125	2.8	20%
Lead	2000	2090	104.5	85 - 115	0	2040	97.6	2100	100.5	99.0	75 - 125	2.9	20%
Zinc	1000	1000	100.0	85 - 115	0	1020	102.0	1040	104.0	103.0	75 - 125	1.9	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

Sample Number: 381344
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1440
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		16.0	MG/KG	12/08/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium, Sediment	<	1.00	MG/KG	12/08/05	6010
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Lead, Sediment		14.0	MG/KG	12/08/05	6010
Zinc, XRF		64.0	MG/KG	11/23/05	6200
Zinc, Sediment		41.0	MG/KG	12/08/05	6010
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-01/SS02; USE FOR CONFIRMATION & MS-/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # **378882**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank				Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec	MSD Result	MSD %Rec	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3000	100.0	85 - 115	70.9	3150	102.6	3070	100.0	101.3	75 - 125	2.6	20%
Cadmium	300	320	106.7	85 - 115	15.8	327	97.3	339	101.0	99.1	75 - 125	3.6	20%
Lead	2000	2100	105.0	85 - 115	115.7	2130	95.9	2240	101.2	98.5	75 - 125	5.0	20%
Zinc	1000	1080	108.0	85 - 115	26000	25800	-18.5	41600	1444.4	713.0	75 - 125	46.9	20%

↓
Units?

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV. Poor recoveries on the MS/MSD for Zinc are attributable to the high concentration of the analyte in the sample.

Form 2 Rev. 07/05

↓
Calculation ??? % Recovery = $\frac{\text{MS Result} - \text{Sample Conc}}{\text{Spike Conc}} \times 100$

Is it as follows

Cadmium % MS = $\frac{327 - 15.8}{300} \times 100 = 103.7\%$

does not match reported?

However does work for Arsenic?

Arsenic % MS = $\frac{3150 - 70.9}{3000} \times 100 = 102.6\%$

Sample Number: 378882
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	10/31/05	6200
Lead, XRF		2270	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Lead (TCLP)		116	UG/L	11/07/05	6010
Arsenic, XRF		168	MG/KG	10/31/05	6200
Cadmium (TCLP)		16.0	UG/L	11/07/05	6010
Arsenic (TCLP)		71.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

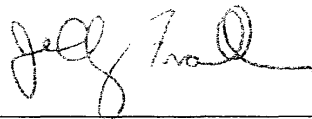
SAMPLERS COMMENTS:
PD1-02/SD01;SAMPLE LOCATION CHOSEN FOR SITE SPECIFIC MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Oklahoma SEL
Analytical Data
RI Phase I
Chain-of-Custody Documentation



Request for Chemical Analysis and Chain of Custody Record

1/13

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: DER-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City OK 73102

Telephone: 405-702-1113

Document Control No: 072005A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DER-TFM

Matrix

Sample Number		Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis <u>TRF (As, Cd, Pb, Zn)</u> <u>ICP (As, Cd, Pb, Zn) + P, S, Se, Sb</u> <u>TCLP (As, Cd, Pb, Zn)</u> <u>ICP (As, Cd, Pb, Zn) Liquids</u> <u>General Chemistry</u>										Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time														
—	PD1-01 PD1-01	SWD01	01	2005	—	—	07-20-05	0723	X		3											
—	PD1-01	SD01	01	2005	0	0.5	07-20-05	0726		X	1	X										
—	PD1-02	SWD01	01	2005	—	—	07-20-05	0740	X		3											
—	PD1-02	SWD01MS	01	2005	—	—	07-20-05	0740	X		3											Use as Matrix Spike
—	PD1-02	SWD01MSD	01	2005	—	—	07-20-05	0740	X		3											Use as Matrix Spike Dup
—	PD1-02	SD01	01	2005	0	0.5	07-20-05	0745		X	3	X	X									
—	PD1-02	SD01MS	01	2005	0	0.5	07-20-05	0745		X	3	X	X									Use as Matrix Spike
—	PD1-02	SD01MSD	01	2005	0	0.5	07-20-05	0745		X	3	X	X									Use as Matrix Spike Dup
—	PD1-02	SD01CF	01	2005	0	0.5	07-20-05	0745		X	1		X									
—	PD1-02	SD01MSCF	01	2005	0	0.5	07-20-05	0745		X	1		X									Use as Matrix Spike
—	PD1-02	SD01MSDCF	01	2005	0	0.5	07-20-05	0745		X	1		X									Use as Matrix Spike Dup
—	PD1-03	SWD01	01	2005	—	—	07-20-05	0810	X		3	X	ASB									No XRF analysis
—	PD1-03	SD01	01	2005	0	0.5	07-20-05	0812		X	1	X										
—	PD2-02	SWD01	01	2005	—	—	07-20-05	0837	X		3											
—	PD2-02	SD01	01	2005	0	0.5	07-20-05	0839		X	1	X										

Sampler (signature):

Sampler (signature):

Special Instructions:

General Chemistry = Alkalinity, COD, Nitrate as N_3 , Sulfate, & TOC

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

10.0°C

Laboratory Comments:

Relinquished By (signature):

1. David Robinson

Date/Time

07-20-05
1530

Received By (signature):

George J...

Date/Time

7-20-05
1530

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

7-21-05



Request for Chemical Analysis and Chain of Custody Record

4/3

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: DEQ-SEL

Address: 707 N Robinson

City/State/Zip: Oklahoma City OK 73102

Telephone: 405 702 1113

Document Control No: 072005A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	AD2-01	SW001	01	2005	---	---	07-20-05	0848	X			3	X	
---	AD2-01	SW001	01	2005	0	0.5	07-20-05	0851		X		1	X	
---	AD3-01	SW001	01	2005	---	---	07-20-05	0911	X			3	X	X
---	AD3-1000	SW001	01	2005	---	---	07-20-05	0911	X			3	X	X
---	AD3-01	SW001	01	2005	0	0.5	07-20-05	0914		X		1	X	
---	AD3-1000	SW001	01	2005	0	0.5	07-20-05	0914		X		1	X	
---	AD3-02	SW001	01	2005	0	0.5	07-20-05	0920	X			3	X	X
---	AD3-02	SW001	01	2005	0	0.5	07-20-05	0922		X		1	X	
---	OFF-01	SW001	01	2005	0	0.5	07-20-05	1054		X		1	X	
---	OFF-02	SW001	01	2005	0	0.5	07-20-05	1054		X		1	X	
---	OFF-03	SW001	01	2005	0	0.5	07-20-05	1103		X		1	X	
---	OFF-02	SW001	01	2005	---	---	07-20-05	1113	X			3	X	X
---	OFF-04	SW001	01	2005	---	---	07-20-05	1114	X			3	X	X
---	OFF-04	SW001MS	01	2005	---	---	07-20-05	1114	X			3	X	X use as Matrix Spike
---	OFF-04	SW001MSD	01	2005	---	---	07-20-05	1114	X			3	X	X use as Matrix Spike Dup

Sampler (signature):

Sampler (signature):

Special Instructions:

General Chemistry = Alkalinity, CO₃, Nitrate as N₃,
Sulfate, & TOC

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. [Signature]

07-20-05
1530

[Signature]

7-20-05
1530

Yes ☒ No ☐

10 °C

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2.

TFM-0001927



Request for Chemical Analysis and Chain of Custody Record

3/3

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405-702-1113

Document Control No: 072005A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
—	OFF-04	SD01	01	2005	0	0.5	07-20-05	1120		X		1	X	
—	OFF-04	SD01MS	01	2005	0	0.5	07-20-05	1120		X		1	X	use as Matrix Spike
—	OFF-04	SD01MS0	01	2005	0	0.5	07-20-05	1120		X		1	X	use as Matrix Spike Dup
—	OFF-05	SD01	01	2005	0	0.5	07-20-05	1157		X		1	X	
—	OFF-06	SD01	01	2005	0	0.5	07-20-05	1201		X		1	X	
—	OFF-07	SD01	01	2005	0	0.5	07-20-05	1206		X		1	X	
—	OFF-08	SD01	01	2005	0	0.5	07-20-05	1212		X		1	X	
—	OFF-1000	SD01	01	2005	0	0.5	07-20-05	1212		X		1	X	
—	Rinsate-02	—	01	2005	0.5	—	07-20-05	1454	X			1	X	
Week 1														
Liquids 378852 - 378866														
Sediments 378881 - 378903														

Sampler (signature):

Sampler (signature):

Special Instructions:

General Chemistry: Alkalinity, COD, Nitrate as N₃, Sulfate & TOC

Relinquished By (signature):

1.

Date/Time

07-20-05
1530

Received By (signature):

Date/Time

7-20-05
1530

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

10.00

Relinquished By (signature):

2

Date/Time

Received By (signature):

Date/Time

7-21-05

Laboratory Comments:

TFM-0001928



Request for Chemical Analysis and Chain of Custody Record

1/2

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: Tracy Cooley					Laboratory: DEQ-SEL Address: 707 N. Robison City/State/Zip: Oklahoma City OK 73102 Telephone: 405-702-1113					Document Control No: 071905A Lab. Reference No. or Episode No.:									
Project Number: 36473					Sample Type					<div>Analysis</div> <div>TRF (As, Cd, Pb, Zn)</div> <div>ICP (As, Cd, Hg, Pb, Zn)</div> <div>ICLP (As, Cd, Hg, Pb, Zn)</div> <div>ICP (As, Cd, Pb, Zn)</div> <div>General Chemistry</div>									
Client Name: DEQ-TFM					Matrix														
Sample Number					Sample Event														
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	Sample Depth (in feet)	Sample Collected	Liquid	Solid	Gas	Number of Containers	Remarks								
	RinGate-01		01	2005	—	—	02-14-05	0805	X		1	X							
	SMP-06	SW01	01	2005	—	—	02-14-05	0934	X		3			X	X				
	SMP-06	SD01	01	2005	0	0.5	02-14-05	0949		X	1	X							
	SMP-05	SW01	01	2005	—	—	02-14-05	0964	X		3			X	X				
	SMP-05	SD01	01	2005	0	0.5	02-14-05	1001		X	1	X							
	SMP-04	SW01	01	2005	—	—	02-14-05	1014	X		3			X	X				
	SMP-04	SD01	01	2005	0	0.5	02-14-05	1020		X	1	X							
	SMP-03	SW01	01	2005	—	—	02-14-05	1044	X		3			X	X				
	SMP-1000	SW01	01	2005	—	—	02-14-05	1044	X		3			X	X				
	SMP-03	SD01	01	2005	0	0.5	02-14-05	1055		X	2	X	X						
	SMP-1000	SD01	01	2005	0	0.5	02-14-05	1055		X	2	X	X						
	SMP-03	SD01 CF	01	2005	0	0.5	02-14-05	1055		X	2	X							
	SMP-1000	SD01 CF	01	2005	0	0.5	02-14-05	1055		X	2	X							
	SMP-02	SW01	01	2005	—	—	02-14-05	1122	X		3			X	X				
	SMP-02	SD01	01	2005	0	0.5	02-14-05	1128		X	1	X							
Sampler (signature):					Sampler (signature):					Special Instructions: General Chemistry = Alkalinity, COD, Nitrate as N ₃ , Sulfate, & TOC									
Relinquished By (signature):					Date/Time: 07-20-05 1530					Received By (signature):					Date/Time: 7-20-05 1530				
Relinquished By (signature):					Date/Time:					Received By (signature):					Date/Time: 7/21/05				
1.										Ice Present in Container: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					Temperature Upon Receipt: 10°C				
										Laboratory Comments:									



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: <u>Tracy Cawley</u>		Laboratory: <u>DEQ-SEL</u> Address: <u>707 N. Robinson</u> City/State/Zip: <u>Oklahoma City, OK 73102</u> Telephone: <u>405-702-1113</u>		Document Control No: <u>072805H</u> Lab. Reference No. or Episode No.:							
Project Number: <u>36478</u>		Sample Type		<div>Analysis ICP (As, Cd, Pb, Zn) ICP (As, Cd, Pb, Zn) ICP (As, Cd, Pb) ICP (As, Cd, Pb, Zn) General Chemistry</div>							
Client Name: <u>DEQ-TFM</u>		Matrix									
Sample Number		Sample Event									
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	Sample Depth (in feet) From To	Sample Collected Date Time	Liquid	Solid	Gas	Number of Containers	Remarks
---	OFF-10	SD01	01	2005	0 0.5	07-20-05 1555		X		3	379559
---	OFF-10	SD01CF	01	2005	0 0.5	07-20-05 1555		X		1	379560
---	OFF-11	SD01	01	2005	0 0.5	07-20-05 1633		X		1	379561
---	OFF-12	SD01	01	2005	0 0.5	07-20-05 1640		X		1	379562
---	OFF-13	SD01	01	2005	0 0.5	07-20-05 1648		X		1	379563
---	OFF-09	SD01	01	2005	---	07-21-05 0848	X		-	3	379557
---	OFF-09	SD01	01	2005	0 0.5	07-21-05 0850		X		1	379558
---	TR-01	SS01	01	2005	0 0.5	07-28-05 0916		X		1	379564
---	TR-1000	SS01	01	2005	0 0.5	07-28-05 0916		X		1	379563
---	TR-01	SS02	01	2005	2.5 3.0	07-28-05 0923		X		3	379566 Use for confirmation
---	TR-01	SS03	01	2005	5.0 5.5	07-28-05 0934		X		1	379567
---	TR-02	SS01	01	2005	0 0.5	07-28-05 0924		X		1	379568
---	TR-02	SS03	01	2005	5.0 5.5	07-28-05 0940		X		1	379569
---	TR-03	SS01	01	2005	0 0.5	07-28-05 1431		X		1	379570
---	TR-03	SS02	01	2005	2.5 3.0	07-28-05 1440		X		2	379571 Use for MS/MSD
Sampler (signature): <u>[Signature]</u>			Sampler (signature):			Special Instructions: General Chemistry = Alkalinity, COD, Nitrate as N, Sulfate, & TOC (2 casks)					
Relinquished By (signature): <u>[Signature]</u>		Date/Time: <u>7-28-05 1230</u>	Received By (signature): <u>[Signature]</u>		Date/Time: <u>7-28-05</u>	Ice Present in Container: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Temperature Upon Receipt: <u>20°C</u>			
Relinquished By (signature):		Date/Time:	Received By (signature):		Date/Time: <u>7-29-05</u>	Laboratory Comments: <u>Week 2</u> <u>7-29-05</u>					



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463		Laboratory: <u>DEQ-SEL</u>		Document Control No: <u>072805B</u>											
		Address: <u>707 N. Robinson</u>		Lab. Reference No. or Episode No.:											
Attention: <u>Tracy Conley</u>		City/State/Zip: <u>Oklahoma City, OK 73102</u>		<div>Analysis</div> <div>XRF (A, G, M, 2a)</div> <div>ICP (A, G, M, 2a) + 92.11</div> <div>TEP (A, G, M)</div>											
Project Number: <u>36478</u>		Telephone: <u>405-702-1113</u>													
Sample Type		Matrix													
Client Name: <u>DEQ-TFM</u>															
Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks		
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time							
---	TR-03	SS03	01	2005	5.0	5.5	07-28-05	1450	X			1 X	379572		
---	TR-04	SS01	01	2005	0	0.5	07-28-05	1410	X			1 X	379573		
---	TR-04	SS03	01	2005	1.5	2.0	07-28-05	1417	X			1 X	379574		
---	TR-05	SS01	01	2005	0	0.5	07-28-05	1003	X			3 X	379575 Use for confirmation		
---	TR-05	SS02	01	2005	2.0	2.5	07-28-05	1029	X			1 X	379576		
---	TR-05	SS03	01	2005	3.0	3.5	07-28-05	1036	X			1 X	379577		
---	TR-06	SS03	01	2005	3.0	3.5	07-28-05	1036	X			1 X	379578		
---	TR-06	SS01	01	2005	0	0.5	07-28-05	1103	X			1 X	379579		
---	TR-06	SS03	01	2005	1.75	2.25	07-28-05	1112	X			1 X	379580		
---	TR-07	SS01	01	2005	0	0.5	07-28-05	1200	X			1 X	379581		
---	TR-07	SS02	01	2005	1.75	2.25	07-28-05	1219	X			1 X	379582		
---	TR-07	SS03	01	2005	2.75	3.25	07-28-05	1226	X			1 X	379583		
---	TR-08	SS01	01	2005	0	0.5	07-28-05	1514	X			1 X	379584		
---	TR-08	SS03	01	2005	4.75	5.25	07-28-05	1533	X			1 X	379585		
---	TR-01	SS01	01	2005	0	0.5	07-28-05	1130	X			1 X	379586		
Sampler (signature): <u>[Signature]</u>			Sampler (signature):			Special Instructions: <u>(2 coolers)</u>									
Relinquished By (signature): <u>[Signature]</u>			Date/Time: <u>7/29/05, 1230</u>			Received By (signature): <u>[Signature]</u>			Date/Time: <u>7-28-05</u>			Ice Present in Container: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Temperature Upon Receipt:	
Relinquished By (signature):			Date/Time:			Received By (signature):			Date/Time: <u>7-29-05</u>			Laboratory Comments: <u>Week 2</u>			



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463				Laboratory: <u>DER-SEL</u> Address: <u>707 N. Robinson</u> City/State/Zip: <u>Oklahoma City, OK 73102</u> Telephone: <u>405-702-1113</u>				Document Control No: <u>072805C</u> Lab. Reference No. or Episode No.:								
Project Number: <u>36478</u>				Sample Type				<div>Analysis</div> <div>TRF (A, G, Ph, 2a)</div> <div>TRF (A, G, Ph, 2a) + % Solid</div> <div>TRF (A, G, Ph)</div>								
Client Name: <u>DER-TFM</u>				Matrix												
Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks			
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time								
—	TR-11	SS02	01	2005	1.0	1.5	07-26-05	1135		X		1	X			379587
—	TR-11	SS03	01	2005	2.0	2.5	07-26-05	1144		X		1	X			379588
—	TR-15	SS01	01	2005	0	0.5	07-26-05	1558		X		1	X			379589
—	TR-15	SS02	01	2005	2.75	3.25	07-26-05	1610		X		1	X			379590
—	TR-15	SS03	01	2005	4.75	5.25	07-26-05	1620		X		1	X			379591
—	TR-09	SS01	01	2005	0	0.5	07-27-05	1202		X		1	X			379592
—	TR-09	SS02	01	2005	4.5	5.0	07-27-05	1227		X		3	X	X	X	379593 Use for confirmation
—	TR-1002	SS02	01	2005	4.5	5.0	07-27-05	1227		X		3	X	X	X	379594 Use for confirmation
—	TR-09	SS03	01	2005	6.5	7.0	07-27-05	1322		X		1	X			379595
—	TR-10	SS01	01	2005	0	0.5	07-27-05	1007		X		1	X			379596
—	TR-10	SS03	01	2005	7.0	7.5	07-27-05	1044		X		1	X			379597
—	TR-13	SS01	01	2005	0	0.5	07-27-05	1400		X		1	X			379598
—	TR-13	SS02	01	2005	3.25	3.75	07-27-05	1459		X		1	X			379599
—	TR-13	SS03	01	2005	5.5	6.0	07-27-05	1531		X		6	X	X	X	379600 Use for confirmation 2/1/06
—	TR-14	SS01	01	2005	0	0.5	07-27-05	0832		X		1	X			379601 379601
Sampler (signature):				Sampler (signature):				Special Instructions: <u>(2 coolers)</u>								
Relinquished By (signature):				Date/Time: <u>7-28-05 1230</u>		Received By (signature):		Date/Time: <u>7-28-05</u>		Ice Present in Container: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Temperature Upon Receipt:				
Relinquished By (signature):				Date/Time:		Received By (signature):		Date/Time: <u>7-28-05</u>		Laboratory Comments: <u>Week 2</u>						



JEFF

Request for Chemical Analysis and Chain of Custody Record

WEEK 3

16-1081-101PS

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405 202 1113

Document Control No: 080205A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number Containers	XRF (As) ICP (As) ICP (Pb) ICP (Cu) ICP (Fe) ICP (Mn) ICP (Ni) ICP (Zn)	Remarks				
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time										
---	SP-50	SS01	01	2005	0	0.5	07/19/05	1558		X		1	X					380095
---	SP-50	SS02	01	2005	0.5	2.0	07/19/05	1600		X		1	X					380096
---	SP-50	SS03	01	2005	2.0	4.0	07/19/05	1605		X		1	X					380097
---	SP-40	SS01	01	2005	0	0.5	07/19/05	1510		X		1	X					380098
---	SP-40	SS02	01	2005	0.5	2.0	07/19/05	1515		X		2	X					380099
---	SP-40	SS03	01	2005	2.0	4.0	07/19/05	1520		X		1	X					380100
---	SP-47	SS01	01	2005	0	0.5	07/19/05	1530		X		1	X					380101
---	SP-47	SS02	01	2005	0.5	2.0	07/19/05	1535		X		1	X					380102
---	SP-47	SS03	01	2005	2.0	4.0	07/19/05	1540		X		2	X					380103
---	SP-49	SS01	01	2005	0	0.5	07/19/05	1445		X		1	X					380104
---	SP-49	SS02	01	2005	0.5	2.0	07/19/05	1450		X		3	X	X	X			380105
---	SP-49	SS03	01	2005	2.0	4.0	07/19/05	1455		X		1	X					380106
---	SP-1013	SS03	01	2005	2.0	4.0	07/19/05	1455		X		1	X					380107
---	SP-12	SS01	01	2005	0	0.5	07/19/05	1400		X		1	X					380108
---	SP-1002	SS01	01	2005	0	0.5	07/19/05	1337		X		1	X					380109

Sampler (signature):

Sampler (signature):

Special instructions: 301103

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL
Address: 707 N. Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405-702-1113

Document Control No: 080205C

Lab. Reference No. or Episode No.:

Attention: Tracy Cooley

Project Number: 36778

Sample Type

Client Name: DEQ-TFM

Matrix

Number of Containers

Analysis
XRF (As, Cd, Pb, Zn)
ICP (As, Cd, Pb, Zn, Hg, Se)
ICP (As, Cd, Pb)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
—	TR-12	SS01	01	2005	0	0.5	07-28-05	0831		X		1 X	380125
—	TR-12	SS03	01	2005	2.5	3.0	07-28-05	0837		X		1 X	380126
—	TR-17	SS01	01	2005	0	0.5	07-28-05	1202		X		1 X	380127
—	TR-17	SS02	01	2005	0.5	1.0	07-28-05	1227		X		1 X	380128
—	TR-17	SS03	01	2005	1.0	1.5	07-28-05	1242		X		1 X	380129
—	TR-18	SS01	01	2005	0	0.5	07-28-05	1112		X		1 X	380130
—	TR-18	SS02	01	2005	0.5	3.0	07-28-05	1136		X		1 X	380131
—	TR-18	SS03	01	2005	2.5	3.0	07-28-05	1136		X		1 X	380132
—	TR-19	SS01	01	2005	0	0.5	07-28-05	0857		X		1 X	380133
—	TR-19	SS02	01	2005	3.0	3.5	07-28-05	0922		X		3 X	Use for 380134
—	TR-19	SS03	01	2005	5.0	5.5	07-28-05	0939		X		1 X	380135
—	TR-20	SS01	01	2005	0	0.5	07-28-05	1035		X		1 X	380136
—	TR-20	SS03	01	2005	3.75	4.25	07-28-05	1052		X		2 X	Use for 380137
—	TR-21	SS01	01	2005	0	0.5	07-28-05	1000		X		1 X	380138
—	TR-21	SS03	01	2005	2.5	3.0	07-28-05	1015		X		1 X	380139

Sampler (signature):

Sampler (signature):

Special Instructions: 36778

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tony Cooley

Laboratory: DEQ-SEL
Address: 707 N. Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405-702-1113

Document Control No: 0802050

Lab. Reference No. or Episode No.:

Project Number: 36425

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers					Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time									
	SP-05	SS01	01	2005	0	0.5	7/29/05	0850		X		2	X	X	X		380140 Use for confirmation
	SP-06	SS01	01	2005	0	0.5	7/29/05	0856		X		1	X				380141
	SP-06	SS02	01	2005	0.5	2.0	7/29/05	0857		X		1	X				380142
	SP-06	SS03	01	2005	2.0	4.0	7/29/05	0859		X		1	X				380143
	SP-1001	SS02	01	2005	0.5	2.0	7/29/05	0857		X		1	X				380144
	SP-07	SS01	01	2005	0	0.5	7/29/05	0910		X		1	X				380145
	SP-23	SS01	01	2005	0	0.5	7/29/05	0918		X		1	X				380146
	SP-23	SS02	01	2005	0.5	2.0	7/29/05	0920		X		1	X				380147
	SP-23	SS03	01	2005	2.0	4.0	7/29/05	0933		X		1	X				380148
	SP-22	SS01	01	2005	0	0.5	7/29/05	0930		X		3	X	X	X		380149 Use for confirmation
	SP-22	SS02	01	2005	0.5	2.0	7/29/05	0935		X		1	X				380150
	SP-22	SS03	01	2005	2.0	4.0	7/29/05	0938		X		1	X				380151
	SP-1005	SS02	01	2005	0.5	2.0	7/29/05	0935		X		1	X				380152
	SP-21	SS01	01	2005	0	0.5	7/29/05	0953		X		1	X				380153
	SP-21	SS02	01	2005	0.5	2.0	7/29/05	0957		X		1	X				380154

Sampler (signature):

Sampler (signature):

Special Instructions: 3 ciders

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Yes ☐

No ☒

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463		Laboratory: <u>DEQ-JEL</u> Address: <u>707 N. Robinson</u> City/State/Zip: <u>Oklahoma City, OK 73102</u> Telephone: <u>405-702-1173</u>		Document Control No: <u>0802055</u> Lab. Reference No. or Episode No.:											
Attention: <u>Tracy Carley</u>		Project Number: <u>36475</u>		Sample Type											
Client Name: <u>DEQ-TFM</u>		Matrix		Number of Containers											
Sample Number		Sample Event		Sample Depth (in feet)		Sample Collected		Liquid		Solid		Gas		Remarks	
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time							
-	SP-21	SS03	01	2005	2.0	4.0	7/29/05	1000		X			1	X	380155
-	SP-20	SS01	01	2005	0	0.5	7/29/05	1012		X			2	X	380156 Use for confirmation
-	SP-20	SS02	01	2005	0.5	2.0	7/29/05	1015		X			1	X	380157
-	SP-20	SS03	01	2005	2.0	4.0	7/29/05	1020		X			1	X	380158
-	SP-26	SS01	01	2005	0	0.5	7/29/05	1032		X			1	X	380159
-	SP-26	SS02	01	2005	0.5	2.0	7/29/05	1035		X			2	X	380160 Use for confirmation
-	SP-26	SS03	01	2005	2.0	4.0	7/29/05	1038		X			1	X	380161
-	SP-25	SS01	01	2005	0	0.5	7/29/05	1055		X			1	X	380162
-	SP-25	SS02	01	2005	0.5	2.0	7/29/05	1100		X			3	X	380163 Use for confirmation
-	SP-25	SS03	01	2005	2.0	4.0	7/29/05	1105		X			1	X	380164
-	SP-18/16	SS02	01	2005	0.5	2.0	7/29/05	1100		X			3	X	380165 Use for confirmation
-	SP-24	SS01	01	2005	0	0.5	7/29/05	1130		X			1	X	380166
-	SP-24	SS02	01	2005	0.5	2.0	7/29/05	1135		X			1	X	380167
-	SP-24	SS03	01	2005	2.0	4.0	7/29/05	1140		X			1	X	380168
-	SP-39	SS01	01	2005	0	0.5	7/29/05	1150		X			1	X	380169
Sampler (signature):			Sampler (signature):			Special Instructions: <u>3 Coolers</u>									
Relinquished By (signature):		Date/Time		Received By (signature):		Date/Time		Ice Present in Container:				Temperature Upon Receipt:			
1. <u>[Signature]</u>		08/04/05 11:30		<u>[Signature]</u>		8-2-05 11:30		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>							
Relinquished By (signature):		Date/Time		Received By (signature):		Date/Time		Laboratory Comments:							



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Coley

Laboratory:

DEQ-SEL

Address:

707 N. Robinson

City/State/Zip:

Oklahoma City, OK 73102

Telephone:

405-702-1113

Document Control No: 08125F

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Number of
Containers

Analysis

XRF (A, Cd, Pb, Zn)
TEP (As, Cd, Pb, Zn, Cr, Ni)
TEP (As, Cd, Pb, Zn)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers					Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time									
---	SP-39	SS02	01	2005	0.5	2.0	7/29/05	1155		X		3	X	X			380170 <u>U.S. for Confirmation</u>
---	SP-39	SS03	01	2005	2.0	4.0	7/29/05	1200		X		1	X				380171
---	SP-1010	SS03	01	2005	2.0	4.0	7/29/05	1200		X		1	X				380172
---	SP-19	SS01	01	2005	0	0.5	7/29/05	1220		X		1	X				380173
---	SP-19	SS02	01	2005	0.5	2.0	7/29/05	1322		X		1	X				380174
---	SP-19	SS03	01	2005	2.0	4.0	7/29/05	1325		X		1	X				380175
---	SP-1004	SS01	01	2005	0	0.5	7/29/05	1320		X		1	X				380176
---	SP-27	SS01	01	2005	0	0.5	7/29/05	1338		X		1	X				380177
---	SP-27	SS02	01	2005	0.5	2.0	7/29/05	1340		X		1	X				380178
---	SP-27	SS03	01	2005	2.0	4.0	7/29/05	1344		X		1	X				380179
---	SP-18	SS01	01	2005	0	0.5	7/29/05	1410		X		1	X				380180
---	SP-18	SS02	01	2005	0.5	2.0	7/29/05	1412		X		1	X				380181
---	SP-18	SS03	01	2005	2.0	4.0	7/29/05	1415		X		3	X	X			380182 <u>U.S. for Confirmation</u>
---	SP-17	SS01	01	2005	0	0.5	7/29/05	1422		X		1	X				380183
---	SP-17	SS02	01	2005	0.5	2.0	7/29/05	1425		X		1	X				380184

Sampler (signature):

Sampler (signature):

Special Instructions:

3 cooler

Relinquished By (signature):

1. [Signature]

Date/Time:

08/02/05
1:30

Received By (signature):

[Signature]

Date/Time:

8-2-05
11:30

Ice Present in Container:

Yes ☐

No ☒

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time:

Received By (signature):

[Signature]

Date/Time:

8-5-05

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracey Cooley

Laboratory:

DEQ-SFL

Address:

707 N. Robinson

City/State/Zip:

Oklahoma City, OK 73102

Telephone:

405-202-1113

Document Control No: 080205B

Lab. Reference No. or Episode No.:

Project Number:

36475

Sample Type

Client Name:

DEQ-TFM

Matrix

Number of
Containers

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time				
-	SP-17	SS03	01	2005	2.0	4.0	7/29/05	1430		X		380185
-	SP-16	SS01	01	2005	0	0.5	7/29/05	1437		X		380186
-	SP-16	SS02	01	2005	0.5	2.0	7/29/05	1440		X		380187
-	SP-16	SS03	01	2005	2.0	4.0	7/29/05	1444		X		380188
-	SP-1003	SS03	01	2005	2.0	4.0	7/29/05	1444		X		380189
-	SP-29	SS01	01	2005	0	0.5	7/29/05	1510		X		380190
-	SP-29	SS02	01	2005	0.5	2.0	7/29/05	1515		X		Use for Confirmation 380191
-	SP-29	SS03	01	2005	2.0	4.0	7/29/05	1520		X		380192
-	SP-1002	SS02	01	2005	0.5	2.0	7/29/05	1515		X		380193
-	SP-32	SS01	01	2005	0	0.5	08/01/05	1215		X		380194
-	SP-32	SS02	01	2005	0.5	2.0	08/01/05	1220		X		Use for Confirmation 380195
-	SP-32	SS03	01	2005	2.0	4.0	08/01/05	1225		X		380196
-	SP-1008	SS03	01	2005	2.0	4.0	08/01/05	1225		X		380197
-	SP-38	SS01	01	2005	0	0.5	08/01/05	1325		X		380198
-	SP-38	SS02	01	2005	0.5	2.0	08/01/05	1330		X		380199

Sampler (signature):

Sampler (signature):

Special Instructions: 3 coolers

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Yes ☐ No ☐

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Copley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405 702 1113

Document Control No: 0802057

Lab. Reference No. or Episode No.:

Project Number: 36479

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis XRF (AS, Cd, Pb, Zn) ICP (As, Cd, Pb, Zn) ICP (As, Cd, Pb, Zn)	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
—	SP-48	SS01	01	2005	0	0.5	07/28/05	1420		X		1	X	380200
—	SP-48	SS02	01	2005	0.5	2.0	07/28/05	1422		X		1	X	380201
—	SP-48	SS03	01	2005	2.0	4.0	07/28/05	1425		X		1	X	380202
—	SP-11	SS01	01	2005	0	0.5	07/28/05	1337		X		1	X	380203
—	SP-11	SS02	01	2005	0.5	2.0	07/28/05	1340		X		1	X	380204
—	SP-11	SS03	01	2005	2.0	4.0	07/28/05	1345		X		2	X	use for 380205
—	SP-30	SS01	01	2005	0	0.5	08/01/05	1145		X		1	X	380206
—	SP-30	SS02	01	2005	0.5	2.0	08/01/05	1150		X		1	X	380207
—	SP-30	SS03	01	2005	2.0	4.0	08/01/05	1153		X		1	X	380208
—	SP-31	SS01	01	2005	0	0.5	08/01/05	1200		X		1	X	380209
—	SP-31	SS02	01	2005	0.5	2.0	08/01/05	1202		X		1	X	380210
—	SP-31	SS03	01	2005	2.0	4.0	08/01/05	1205		X		1	X	380211
—	SP-37	SS01	01	2005	0	0.5	08/01/05	1302		X		1	X	380212
—	SP-37	SS02	01	2005	0.5	2.0	08/01/05	1305		X		1	X	380213
—	SP-37	SS03	01	2005	2.0	4.0	08/01/05	1308		X		1	X	380214

Sampler (signature):

Sampler (signature):

Special Instructions: 3 samples

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Yes ☐ No ☒

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: SEQ - SEL
Address: 707 N. Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405-702-1038

Document Control No: 0X0205 J

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: SEQ - TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
—	SP-42	SS01	01	2005	0	0.5	8/1/05	1418		X		1	X	380230
—	SP-42	SS02	01	2005	0.5	2.0	8/1/05	1420		X		1	X	380231
—	SP-42	SS03	01	2005	2.0	4.0	8/1/05	1425		X		3	X X X	use for 380232
—	SP-43	SS01	01	2005	0	0.5	8/1/05	1442		X		1	X	380233
—	SP-1011	SS01	01	2005	0	0.5	8/1/05	1442		X		1	X	380234
—	SP-43	SS02	01	2005	0.5	2.0	8/1/05	1445		X		1	X	380235
—	SP-43	SS03	01	2005	2.0	4.0	8/1/05	1450		X		1	X	380236
—	SP-45	SS01	01	2005	0	0.5	8/1/05	1503		X		1	X	380237
—	SP-45	SS02	01	2005	0.5	2.0	8/1/05	1505		X		1	X	380238
—	SP-45	SS03	01	2005	2.0	4.0	8/1/05	1510		X		1	X	380239
—	SP-46	SS01	01	2005	0	0.5	8/1/05	1518		X		3	X X X	use for 380240
—	SP-46	SS02	01	2005	0.5	2.0	8/1/05	1522		X		1	X	380241
—	SP-1012	SS02	01	2005	0.5	2.0	8/1/05	1522		X		1	X	380242
—	SP-46	SS03	01	2005	2.0	4.0	8/1/05	1528		X		1	X	380243
—	SP-44	SS01	01	2005	0	0.5	8/1/05	1548		X		1	X	380244

Sampler (signature):

Sampler (signature):

Special Instructions: 3 containers

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

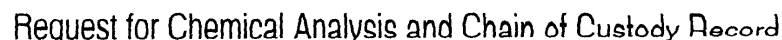
Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405-702-1038

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ - TFM

Matrix

Number of Containers	Analysis
	XRF (As, Cd, Pb, Zn)
	ECP (As, Cd, Pb, Zn)
	ICP (As, Cd, Pb, Zn) ^{see Sample}
	ICP (As, Cd, Pb)

Special Instructions:

3 coopers

Temperature Upon Receipt:

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463			Laboratory: <u>DEQ-SEL</u> Address: <u>707 N. Robinson</u> City/State/Zip: <u>Oklahoma City, OK 73102</u> Telephone: <u>405-702-1038</u> ²⁰⁵⁸ <u>1113</u>						Document Control No: <u>081705A</u> Lab. Reference No. or Episode No.:									
Project Number: <u>36478</u>			Sample Type						Analysis XRF (As, Cd, Pb, Zn) ICP (As, Cd, Pb, Zn) + 7.5 Sediment TCLP (As, Cd, Pb)									
Client Name: <u>DEQ - TFM</u>			Matrix															
Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks					
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time										
—	PZ-04	SS01	01	2005	0	0.5	08/02/05	1055		X		1	X				381328	
—	PZ-04	SS02	01	2005	0.5	2.0	08/02/05	1057		X		1	X				381329	
—	PZ-04	SS03	01	2005	2.0	4.0	08/02/05	1059		X		1	X				381330	
—	PZ-04	SS04	01	2005	4.0	8.0	08/02/05	1105		X		6	X	X	X	381331	use for M/LMD & confirmation	
—	PZ-04	SS05	01	2005	8.0	10.5	08/02/05	1110		X		1	X				381332	
—	PZ-07	SS01	01	2005	0	0.5	08/02/05	1215		X		1	X				381333	
—	PZ-07	SS02	01	2005	0.5	2.0	08/02/05	1218		X		1	X				381334	
—	PZ-07	SS03	01	2005	2.0	4.0	08/02/05	1222		X		3	X	X	X	381335	use for confirmation	
—	PZ-07	SS04	01	2005	4.0	8.0	08/02/05	1225		X		1	X				381336	
—	PZ-07	SS05	01	2005	8.0	10.25	08/02/05	1230		X		1	X				381337	
—	PZ-1000	SS02	01	2005	0.5	2.0	08/02/05	1218		X		1	X				381338	
—	PZ-09	SS01	01	2005	0	0.5	08/02/05	1433		X		1	X				381339	
—	PZ-09	SS02	01	2005	0.5	2.0	08/02/05	1435		X		1	X				381340	
—	PZ-09	SS04	01	2005	4.0	8.0	08/02/05	1440		X		1	X				381341	
—	PZ-1002	SS04	01	2005	4.0	8.0	08/02/05	1440		X		1	X				381342	
Sampler (signature): <u>[Signature]</u>			Sampler (signature):						Special Instructions:									
Relinquished By (signature): <u>[Signature]</u>			Date/Time: <u>08/17/05 1325</u>		Received By (signature): <u>[Signature]</u>			Date/Time: <u>8-17-05 1325</u>		Ice Present in Container: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			Temperature Upon Receipt:					
Relinquished By (signature):			Date/Time:		Received By (signature): <u>[Signature]</u>			Date/Time: <u>8/19/05 12130</u>		Laboratory Comments: <u>Sediments</u>			Week <u>4</u>					



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tony Cowley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Delehorre City, OK 73102

Telephone: 405-702-1113

Document Control No: 080205 K

Lab. Reference No. or Episode No.:

Project Number: 30478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
1	SP-02	SS01	01	2005	0	0.5	07/28/05	1048		X		1	X	380245
1	SP-03	SS01	01	2005	0	0.5	07/28/05	1056		X		1	X	380244
1	SP-03	SS02	01	2005	0.5	2.0	07/28/05	1057		X		1	X	380247
1	SP-03	SS03	01	2005	2.0	4.0	07/28/05	1059		X		1	X	380248
1	SP-04	SS01	01	2005	0	0.5	07/28/05	1116		X		1	X	380249
1	SP-15	SS01	01	2005	0	0.5	07/28/05	1210		X		1	X	380250
1	SP-33	SS01	01	2005	0	0.5	08/01/05	1238		X		2	X	use for 380251
1	SP-33	SS02	01	2005	0.5	2.0	08/01/05	1240		X		1	X	380252
1	SP-33	SS03	01	2005	2.0	4.0	08/01/05	1245		X		1	X	380253
1	SP-41	SS02	01	2005	0.5	2.0	08/01/05	1350		X		1	X	380254
1	SP-41	SS03	01	2005	2.0	4.0	08/01/05	1353		X		1	X	380255
1	SP-44	SS02	01	2005	0.5	2.0	08/01/05	1550		X		1	X	380256
1	SP-44	SS03	01	2005	2.0	4.0	08/01/05	1555		X		1	X	380257
1	SP-51	SS01	01	2005	0	0.5	08/01/05	1613		X		1	X	380258
1	SP-51	SS02	01	2005	0.5	2.0	08/01/05	1615		X		1	X	380259

Sampler (signature):

Sampler (signature):

Special Instructions: 300003

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Document Control No: 040705A

Laboratory: DEQ-SEL
Address: 727 N. Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405 202 1113

Lab. Reference No. or Episode No.:

Attention: *Therese Cooley*

Project Number: 36478

Sample Type


Client Name: DEA-TFM

Matrix

Number of Containers	Number of Containers
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Analysis

Remarks

Sampler (signature): 

Sampler (signature):

Special Instructions:

Relinquished By (signature): 


Date/Time
08/15/05
7:05

Received By (signature):

Date/Time
8/26/05 1000

Ice Present in Container:
Yes ☐ No ☐

Temperature Upon Receipt:

Relinquished By (signature):
2. 

Date/Time 04/07/05 12:25

Received By (signature):

Date/Time
9-7-05

Laboratory Comments:

Tamm Mason 9/9/15



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Troy Cooley

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1413

Document Control No: 3907058

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	OSL-21	SS01	01	2005	0	0.25	08/26/05	1210	X			1	X	382558
---	OSL-14	SS01	01	2005	0	0.25	08/26/05	1551	X			1	X	382559
---	OSL-34	SS01	01	2005	0	0.25	08/26/05	1641	X			1	X	382560
---	OSL-57	SS01	01	2005	0	0.25	08/27/05	0440	X			1	X	382561
---	OSL-58	SS01	01	2005	0	0.25	08/27/05	1021	X			1	X	382562
---	OSL-53	SS01	01	2005	0	0.25	08/28/05	0426	X			1	X	382563
---	OSL-78	SS01	01	2005	0	0.25	08/29/05	1000	X			1	X	382564
---	OSL-05	SS01	01	2005	0	0.25	08/29/05	1325	X			1	X	382565
---	OSL-25	SS01	01	2005	0	0.25	08/29/05	1353	X			1	X	382566
---	OSL-12	SS01	01	2005	0	0.25	08/29/05	1407	X			3	X X X	382567
---	OSL-46	SS01	01	2005	0	0.25	08/29/05	1453	X			1	X	382568
---	TAB-10	SS01	01	2005	0	0.25	08/29/05	1645	X			3	X X X	382569
---	OSL-47	SS01	01	2005	0	0.25	08/29/05	1510	X			1	X	382570
---	OSL-41	SS01	01	2005	0	0.25	08/29/05	1530	X			1	X	382571
---	OSL-40	SS01	01	2005	0	0.25	08/29/05	1550	X			1	X	382572

Sampler (signature):

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

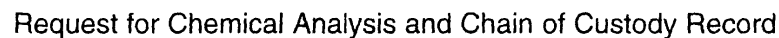
Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:


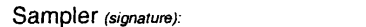









Laboratory: DEQ SEL
Address: 707 N. Robinson
City/State/Zip: Oklahoma City OK 73102
Telephone: 405 702 1113

Lab. Reference No. or Episode No.:

Sample Type

Matrix

Sampler (signature): 		Sampler (signature): 		Special Instructions: 	
Relinquished By (signature): 1. 	Date/Time 08/14/05 2030	Received By (signature): 	Date/Time 8/30/05 1000	Ice Present in Container: Yes <input type="checkbox"/> No <input type="checkbox"/>	Temperature Upon Receipt: 
Relinquished By (signature): 2. 	Date/Time 09/07/05 1305	Received By (signature): 	Date/Time 7-9-05 1345	Laboratory Comments: 	



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Conley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: OKlahoma City, OK 73102

Telephone: 405 702 1113

Document Control No: 0907050

Lab. Reference No. or Episode No.:

Project Number: 38278

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	OSL-26	SS01	01	2005	0	0.25	08/30/05	0950		X		1	X	382579
---	OSL-97A	SS01	01	2005	0	0.25	08/30/05	1005		X		1	X	382580
---	OSL-987B	SS01	01	2005	0	0.25	08/30/05	1016		X		1	X	382581
---	TSL-03	SS01	01	2005	0	0.25	08/30/05	1043		X		1	X	382582
---	OSL-04	SS01	01	2005	0	0.25	08/30/05	1055		X		1	X	382583
---	TSL-04	SS01	01	2005	0	0.25	08/30/05	1107		X		3	X X X	382584 use for matrix
---	OSL-06	SS01	01	2005	0	0.25	08/30/05	1135		X		1	X	382585
---	OSL-29	SS01	01	2005	0	0.25	08/30/05	1200		X		1	X	382586
---	OSL-94	SS01	01	2005	0	0.25	08/30/05	1214		X		1	X	382587
---	OSL-94DW	SS01 GAAA	01	2005	0	0.25	08/30/05	1225		X		1	X	382588
---	TRR-04	SS01	01	2005	0	0.25	08/30/05	1235		X		1	X	382589
---	OSL-27	SS01	01	2005	0	0.25	08/30/05	1337		X		1	X	382590 use for matrix
---	OSL-98	SS01	01	2005	0	0.25	08/30/05	1400		X		1	X	382591
---	OSL-73	SS01	01	2005	0	0.25	08/30/05	1421		X		1	X	382592
---	OSL-59	SS01	01	2005	0	0.25	08/30/05	1500		X		1	X	382593

Sampler (signature):

[Signature]

Sampler (signature):

[Signature]

Special Instructions:

Relinquished By (signature):

1. *[Signature]*

Date/Time

08/30/05
2030

Received By (signature):

[Signature]

Date/Time

8/31/05 1000

Ice Present in Container:

Yes ☐

No ☐

Temperature Upon Receipt:

Relinquished By (signature):

[Signature]

Date/Time

09/02/05
1130

Received By (signature):

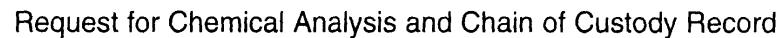
[Signature]

Date/Time

09/02/05
0730

Laboratory Comments:

[Signature]



Lab. Reference No. or Episode No.:

Laboratory: 752-586
Address: 707 N Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405 702 1113

Attention: Tracy Cooker

Sample Type

Client Name: 2025-2026

Matrix

Remarks

Continuation of ~~above~~^{SSA} custody samples listed on previous sheet

Laboratory Comments:

2.)

TFM-0001953



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: DEQ -SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405 702 1113

Document Control No: 090705E

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ -TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	DSL-61	SS01	01	2005	0	0.25	08/30/05	1510		X		1	X	382594
---	TRB-09	SS01	01	2005	0	0.25	08/30/05	1535		X		1	X	use for 382595
---	TRB-08	SS01	01	2005	0	0.25	08/30/05	1600		X		1	X	382596
---	TRB-04NW	GRAB	01	2005	0	0.25	08/30/05	1610		X		1	X	382597
---	TSL-02	SS01	01	2005	0	0.25	08/30/05	1643		X		1	X	382598
---	TSL-01	SS01	01	2005	0	0.25	08/30/05	1700		X		1	X	382599
---	DSL-02	SS01	01	2005	0	0.25	08/30/05	1713		X		1	X	382600
---	DSL-01	SS01	01	2005	0	0.25	08/30/05	1723		X		3	X X X	use for 382601
---	DSL-05	SS01	01	2005	0	0.25	08/30/05	1735		X		1	X	382602
---	TSL-1000	SS01	01	2005	0	0.25	08/30/05	1107		X		3	X X X	use for 382603
---	DSL-1005	SS01	01	2005	0	0.25	08/30/05	1421		X		1	X	382604

Sampler (signature):

[Signature]

Sampler (signature):

[Signature]

Special Instructions:

Relinquished By (signature):

1. *[Signature]*

Date/Time

08/30/05
1620

Received By (signature):

[Signature]

Date/Time

08/31/05 1000

Ice Present in Container:

Yes ☐ No ☐

Temperature Upon Receipt:

Relinquished By (signature):

2. *[Signature]*

Date/Time

09/02/05
1620

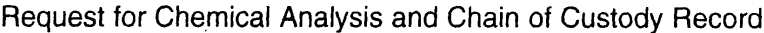
Received By (signature):

[Signature]

Date/Time

09/06/05
0720

Laboratory Comments:



Laboratory: NEQ-DEL
Address: 707 N. Robinson
City/State/Zip: OKlahoma City OK 73102
Telephone: 405 702 1113

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEK-FM

Matrix

Sample Number

Sample Event

Sample Depth
(in feet)

Sample
Collected

Group or
SWMU NameSample
Point

Sample Designator

Round

Year

From

O

ate

Time

Liquor

Solilo

Gas

Number of Containers

Analysis

Remarks

Sampler (signature):

Sampler (signature):

Special Instructions:

Relinquished By (signature): _____

Date/Time
 11/11/11 11:11 AM

Received By (signature):

Date/Time 6/27/2014

Relinquished By (signature).

Date/Time

Received By (signature):

Date/Time:

Ice Present in Container:
Yes ☐ No ☐

Temperature Upon Receipt: _____

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tracy Cooley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405 702 1113

Document Control No: 040705F

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis				Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					As	Ca	Co	Pb	
---	056-17	SS01	01	2005	0	0.25	08/31/05	1625		X		3	X	X	X		382605 Use for confirmation
---	056-19	SS01	01	2005	0	0.25	08/31/05	1605		X		1	X				382606
---	056-31	SS01	01	2005	0	0.25	08/31/05	1545		X		1	X				382607
---	056-35	SS01	01	2005	0	0.25	08/31/05	1355		X		1	X				382608
---	056-64	SS01	01	2005	0	0.25	08/31/05	1250		X		1	X				382609
---	056-65-01	SS01	01	2005	0	0.25	08/31/05	1535		X		3	X	X	X		382610 Use for confirmation
---	056-07	SS01	01	2005	0	0.25	08/31/05	1100		X		1	X				382611
---	056-65	SS01	01	2005	0	0.25	08/31/05	1239		X		1	X				382612
---	056-67	SS01	01	2005	0	0.25	08/31/05	1515		X		1	X				382613
---	056-66	SS01	01	2005	0	0.25	08/31/05	1450		X		1	X				382614
---	056-49	SS01	01	2005	0	0.25	08/31/05	1006		X		1	X				382615
---	056-06	SS01	01	2005	0	0.25	08/31/05	1050		X		1	X				382616 Use for confirmation
---	056-65	SS01	01	2005	0	0.25	08/31/05	1315		X		1	X				382617 Use for confirmation
---	056-56	SS01	01	2005	0	0.25	08/31/05	1426		X		1	X				382618
---	056-50	SS01	01	2005	0	0.25	08/31/05	0950		X		3	X	X	X		382619 Use for confirmation

Sampler (signature):

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time
9/1/05
0800

Received By (signature):

Date/Time
9-1-05
0800

Ice Present in Container:
Yes ☐ No ☐

Temperature Upon Receipt:

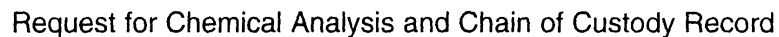
Relinquished By (signature):

Date/Time
09/02/05
1630

Received By (signature):

Date/Time
09/06/05
0700

Laboratory Comments:



Laboratory: OER FEL
Address: 707 N Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405 702 1113

Lab. Reference No. or Episode No.:

Project Number: 2002

Sample Type

Client Name: 231-511

Matrix

[illegible]

Special Instructions:

Temperature Upon Receipt:

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Troy Coley

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: OKlahoma City, OK 73102

Telephone: 405 702 1113

Document Control No: 090705 G

Lab. Reference No. or Episode No.:

Project Number: 36424

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	OSL-36	SS01	01	2005	0	0.25	08/31/05	0822		X		1	X	382620
---	OSL-40	SS01	01	2005	0	0.25	08/31/05	10:8		X		1	X	382621
---	OSL-54	SS01	01	2005	0	0.25	08/31/05	1330		X		1	X	382622
---	OSL-37	SS01	01	2005	0	0.25	08/31/05	0835		X		3	X X X	382623 Use for comparison
---	OSL-39	SS01	01	2005	0	0.25	08/31/05	0848		X		1	X	382624
---	TR2-01	SS01	01	2005	0	0.25	8/31/05	0858		X		1	X	382625
---	OSL-37	SS01	01	2005	0	0.25	8/31/05	0910		X		1	X	382626
---	OSL-36 DW	SS01	01	2005	0	0.25	8/31/05	0905		X		1	X	382627
---	OSL-1202	SS01	01	2005	0	0.25	08/31/05	0950		X		3	X X X	382628 Use for comparison
---	OSL-1201	SS01	01	2005	0	0.25	08/31/05	0835		X		3	X X X	382629 Use for comparison
---	OSL-1202	SS01	01	2005	0	0.25	08/31/05	1620		X		3	X X X	382630 Use for comparison

Sampler (signature):

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

[illegible]



Request for Chemical Analysis and Chain of Custody Record

* SHIPPED IN 3 COOLERS

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: Tammy MayesLaboratory: DEQ - SELAddress: 707 N. RobinsonCity/State/Zip: Oklahoma City OK 73102Telephone: 405 702 1113Document Control No: 031305A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ - TFM (PCC George Thomas)

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis				Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time									
	PZ-01	GW01	01	2005	-	-	09/13/05	0716	X			1				X	383120
	PZ-02	GW01	01	2005	-	-	09/13/05	0758	X			1				X	383121
	PZ-03	GW01	01	2005	-	-	09/13/05	0838	X			2				X X	383122
	PZ-04	GW01	01	2005	-	-	09/13/05	0908	X			2				X X	383123
	PZ-05	GW01	01	2005	-	-	09/13/05	0937	X			1				X	383124
	PZ-06	GW01	01	2005	-	-	09/13/05	0958	X			1				X	383125
	PZ-07	GW01	01	2005	-	-	09/13/05	1018	X			3				X X	383126
	PZ-08	GW01	01	2005	-	-	09/13/05	1112	X			2				X X	383127
	PZ-09	GW01	01	2005	-	-	09/13/05	1137	X			9				X X	use for 383128
	BG-OFF-02	SW01	01	2005	-	-	09/13/05	1450	X			3				X X	383129
	BG-DSL-02	SS01	01	2005	0	0.25	09/13/05	1506		X		1 X					383117
	TAB-11	SS01	01	2005	0	0.25	09/13/05	1553		X		1 X					383118
	BG-OFF-02	SS01	01	2005	0	0.5	09/13/05	1459		X		1 X					383119
	PZ-1001	SW01	01	2005	-	-	09/13/05	1137	X			3				X X	383130
	PZ-1002	SW01	01	2005	-	-	09/13/05	1640	X			9				X X	use for 383131

Sampler (signature):

Sampler (signature):

Special Instructions:

General Chemistry: Alkalinity, CO₂, Nitrate, N₂.
3 Coolers, TFM, 3 coolers

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

48

Laboratory Comments:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time



SeFF

Request for Chemical Analysis and Chain of Custody Record

Shipment in 2 coolers

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: 352-55L
Address: 707 N Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405-702-1113

Document Control No: 391905A

Lab. Reference No. or Episode No.:

Project Number: 352-76

Sample Type

Client Name: 352-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
---	RG-OFF-01	SW01	01	2005	---	---	09/29/05	1028	X			3	X X	354387
---	RG-OFF-01	SD01	01	2005	0	0.5	09/29/05	1038		X		1	X	384385
---	RG-OFF-1000	SW01	01	2005	---	---	09/29/05	1028	X			3	X X	354388
---	RG-OFF-1000	SD01	01	2005	0	0.5	09/29/05	1038		X		1	X	354386
---	MW-01	GW01	01	2005	---	---	09/29/05	1135	X			3	X X	354389
---	MW-02	GW01	01	2005	---	---	09/29/05	1230	X			1	X	354390
---	MW-03	GW01	01	2005	---	---	09/29/05	1624	X			3	X X	384391
---	MW-04	GW01	01	2005	---	---	09/29/05	1411	X			9	X X	354392
---	MW-05	SW01	01	2005	---	---	09/29/05	1456	X			21	X	384393
---	MW-06	GW01	01	2005	---	---	09/29/05	1624	X			3	X X	384395
7 unfiltered water		GW01	01	2005	---	---	9/29/05	1456	X			1	X	384394

Sampler (signature):

Sampler (signature):

Special Instructions:

General Chemistry = Alkalinity, COD, NH_3 , H_2S , SO_4 , TDS

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

4

Relinquished By (signature):

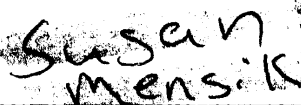
Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

TFM-0001961



Susan
mensik

[illegible]

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
EQUIPMENT RINSATE BLANK OF PONAR SAMP	W1	378844	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-06/SW01	W1	378845	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-06/SW01	W1	378845	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-05/ SW01	W1	378846	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-05/ SW01	W1	378846	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-04/SW01	W1	378847	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-04/SW01	W1	378847	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-03/SW01	W1	378848	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-03/SW01	W1	378848	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-1000/SW01	W1	378849	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-1000/SW01	W1	378849	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-02/SW01	W1	378850	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-02/SW01	W1	378850	7/19/2005	TF-LIQ	7/21/2005	METALS
SMP-01/SW01	W1	378851	7/19/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
SMP-01/SW01	W1	378851	7/19/2005	TF-LIQ	7/21/2005	METALS
PDI-01/SW01	W1	378852	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PDI-01/SW01	W1	378852	7/20/2005	TF-LIQ	7/21/2005	METALS
PDI-02/SW01;SAMPLE LOCATION CHOSEN AS	W1	378853	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PDI-02/SW01;SAMPLE LOCATION CHOSEN AS	W1	378853	7/20/2005	TF-LIQ	7/21/2005	METALS
PDI-02/SW01MS; USE THESE BOTTLES FOR SI	W1	378854	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PDI-02/SW01MS; USE THESE BOTTLES FOR SI	W1	378854	7/20/2005	TF-LIQ	7/21/2005	METALS
PDI-02/SD01MSD; USE THESE BOTTLES FOR S	W1	378855	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PDI-02/SD01MSD; USE THESE BOTTLES FOR S	W1	378855	7/20/2005	TF-LIQ	7/21/2005	METALS
PDI-03/SW01	W1	378856	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PDI-03/SW01	W1	378856	7/20/2005	TF-LIQ	7/21/2005	METALS
PD2-02/SW01	W1	378857	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PD2-02/SW01	W1	378857	7/20/2005	TF-LIQ	7/21/2005	METALS
PD2-01/SW01	W1	378858	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PD2-01/SW01	W1	378858	7/20/2005	TF-LIQ	7/21/2005	METALS
PD3-01/SW01	W1	378859	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PD3-01/SW01	W1	378859	7/20/2005	TF-LIQ	7/21/2005	METALS
PD3-1000/SW01	W1	378860	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PD3-1000/SW01	W1	378860	7/20/2005	TF-LIQ	7/21/2005	METALS
PD3-02/SW01	W1	378861	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
PD3-02/SW01	W1	378861	7/20/2005	TF-LIQ	7/21/2005	METALS
OFF-02/SW01	W1	378862	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
OFF-02/SW01	W1	378862	7/20/2005	TF-LIQ	7/21/2005	METALS
OFF-04/SW01;THIS SAMPLE LOCATION WAS	W1	378863	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
OFF-04/SW01;THIS SAMPLE LOCATION WAS	W1	378863	7/20/2005	TF-LIQ	7/21/2005	METALS
OFF-04/SW01MS;USE THES BOTTLES FOR SIT	W1	378864	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
OFF-04/SW01MS;USE THES BOTTLES FOR SIT	W1	378864	7/20/2005	TF-LIQ	7/21/2005	METALS
OFF-04/SW01MSD;USE THES BOTTLES FOR SI	W1	378865	7/20/2005	TF-LIQ	7/21/2005	GENERAL CHEMISTRY
OFF-04/SW01MSD;USE THES BOTTLES FOR SI	W1	378865	7/20/2005	TF-LIQ	7/21/2005	METALS
RINSATE-02;EQUIPMENT RINSATE BLANK OF	W1	378866	7/20/2005	TF-LIQ	7/21/2005	METALS
SMP-06/SD01	W1	378867	7/19/2005	TF-SED	7/21/2005	METALS
SMP-05/SD01	W1	378868	7/19/2005	TF-SED	7/21/2005	METALS
SMP-04/SD01	W1	378869	7/19/2005	TF-SED	7/21/2005	METALS
SMP-03/SD01	W1	378870	7/19/2005	TF-SED	7/21/2005	METALS
SMP-1000/SD01	W1	378871	7/19/2005	TF-SED	7/21/2005	METALS
SMP-03/SD01CF;USE SAMPLE FOR ICP CONFIR	W1	378872	7/19/2005	TF-SED	7/21/2005	METALS
SMP-1000/SD01CF;USE SAMPLE FOR ICP CONFI	W1	378873	7/19/2005	TF-SED	7/21/2005	METALS
SMP-02/SD01	W1	378874	7/19/2005	TF-SED	7/21/2005	METALS
SMP-01/SD01	W1	378875	7/19/2005	TF-SED	7/21/2005	METALS
PD5-01/SD01	W1	378876	7/19/2005	TF-SED	7/21/2005	METALS
MSR-01/SD01	W1	378877	7/19/2005	TF-SED	7/21/2005	METALS
MSR-02/SD01	W1	378878	7/19/2005	TF-SED	7/21/2005	METALS
MSR-03/SD01	W1	378879	7/19/2005	TF-SED	7/21/2005	METALS
PD4-01/SD01	W1	378880	7/19/2005	TF-SED	7/21/2005	METALS
PD1-01/SD01	W1	378881	7/20/2005	TF-SED	7/21/2005	METALS
PD1-02/SD01;SAMPLE LOCATION CHOSEN FOR	W1	378882	7/20/2005	TF-SED	7/21/2005	METALS
PD1-02/SD01MS;USE THESE BOTTLES FOR SIT	W1	378883	7/20/2005	TF-SED	7/21/2005	METALS
PD1-02/SD01MSD;USE THESE BOTTLES FOR SI	W1	378884	7/20/2005	TF-SED	7/21/2005	METALS
PDI-02/SD01CF; SAMPLE LOCATION CHOSEN F	W1	378885	7/20/2005	TF-SED	7/21/2005	METALS
PDI-02/SD01MSCF; SAMPLE LOCATION CHOSE	W1	378886	7/20/2005	TF-SED	7/21/2005	METALS
PDI-02/SD01MSCF; USE THESE BOTTLES FOR	W1	378887	7/20/2005	TF-SED	7/21/2005	METALS
PDI-03/SD01	W1	378888	7/20/2005	TF-SED	7/21/2005	METALS
PD2-02/SD01	W1	378889	7/20/2005	TF-SED	7/21/2005	METALS
PD2-01/SD01	W1	378890	7/20/2005	TF-SED	7/21/2005	METALS
PD3-01/SD01	W1	378891	7/20/2005	TF-SED	7/21/2005	METALS
PD3-1000/SD01	W1	378892	7/20/2005	TF-SED	7/21/2005	METALS
PD3-02/SD01	W1	378893	7/20/2005	TF-SED	7/21/2005	METALS
OFF-01/SD01	W1	378894	7/20/2005	TF-SED	7/21/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
OFF-02/SD01	W1	378895	7/20/2005	TF-SED	7/21/2005	METALS
OFF-03/SD01	W1	378896	7/20/2005	TF-SED	7/21/2005	METALS
OFF-04/SD01: SAMPLE LOCTION WAS CHOSEN	W1	378897	7/20/2005	TF-SED	7/21/2005	METALS
OFF-04/SD01MS: USE THESE BOTTLES FOR SI	W1	378898	7/20/2005	TF-SED	7/21/2005	METALS
OFF-04/SD01MSD: USE THESE BOTTLES FOR S	W1	378899	7/20/2005	TF-SED	7/21/2005	METALS
OFF-05/SD01	W1	378900	7/20/2005	TF-SED	7/21/2005	METALS
OFF-06/SD01	W1	378901	7/20/2005	TF-SED	7/21/2005	METALS
OFF-07/SD01	W1	378902	7/20/2005	TF-SED	7/21/2005	METALS
OFF-08/SD01	W1	378903	7/20/2005	TF-SED	7/21/2005	METALS
OFF-1000/SD01	W1	378904	7/20/2005	TF-SED	7/21/2005	METALS
OFF-09/SW01	W2	379557	7/21/2005	TF-LIQ	7/29/2005 3:01:35 PM	GENERAL CHEMISTRY
OFF-09/SW01	W2	379557	7/21/2005	TF-LIQ	7/29/2005 3:01:35 PM	METALS
OFF-09/SD01	W2	379558	7/21/2005	TF-SED	7/29/2005 3:03:04 PM	METALS
OFF-10/SD01	W2	379559	7/20/2005	TF-SED	7/29/2005 3:03:04 PM	METALS
OFF-10/SD01CF	W2	379560	7/20/2005	TF-SED	7/29/2005 3:03:04 PM	METALS
OFF-11/SD01	W2	379561	7/20/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
OFF-12/SD01	W2	379562	7/20/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
OFF-13/SD01	W2	379563	7/20/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
TR-01/SS01	W2	379564	7/26/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
TR-1000/SS01	W2	379565	7/26/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
TR-01/SS02: USE FOR CONFIRMATION	W2	379566	7/26/2005	TF-SED	7/29/2005 3:08:45 PM	METALS
TR-01/SS03	W2	379567	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-02/SS01	W2	379568	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-02/SS03	W2	379569	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-03/SS01	W2	379570	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-03/SS02: USE FOR MS/MSD	W2	379571	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-03/SS03	W2	379572	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-04/SS01	W2	379573	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-04/SS03	W2	379574	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-05/SS01: USE FOR CONFIRMATION	W2	379575	7/26/2005	TF-SED	7/29/2005 3:26:44 PM	METALS
TR-05/SS02	W2	379576	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-05/SS03	W2	379577	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-1001/SS03	W2	379578	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-06/SS01	W2	379579	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-06/SS03	W2	379580	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-07/SS01	W2	379581	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
TR-07/SS02	W2	379582	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-07/SS03	W2	379583	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-08/SS01	W2	379584	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-08/SS03	W2	379585	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-11/SS01	W2	379586	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-11/SS02	W2	379587	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-11/SS03	W2	379588	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-15/SS01	W2	379589	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-15/SS02	W2	379590	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-15/SS03	W2	379591	7/26/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-09/SS01	W2	379592	7/27/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-09/SS02; USE FOR CONFIRMATION	W2	379593	7/27/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-1002/SS02; USE FOR CONFIRMATION	W2	379594	7/27/2005	TF-SED	7/29/2005 3:32:48 PM	METALS
TR-09/SS03	W2	379595	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-10/SS01	W2	379596	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-10/SS03	W2	379597	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-13/SS01	W2	379598	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-13/SS02	W2	379599	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-13/SS03; USE FOR CONFIRMATION	W2	379600	7/27/2005	TF-SED	7/29/2005 3:43:25 PM	METALS
TR-14/SS01	W2	379601	7/27/2005	TF-SED	7/29/2005 3:48:29 PM	METALS
TR-1003/SS01	W2	379602	7/27/2005	TF-SED	7/29/2005 3:48:29 PM	METALS
TR-14/SS03	W2	379603	7/27/2005	TF-SED	7/29/2005 3:48:29 PM	METALS
TR-16/SS01	W2	379604	7/27/2005	TF-SED	7/29/2005 3:48:29 PM	METALS
TR-16/SS02	W2	379605	7/27/2005	TF-SED	7/29/2005 3:48:29 PM	METALS
SP-50/SS01	W3	380095	7/28/2005	TF-SED	8/5/2005	METALS
SP-50/SS02	W3	380096	7/28/2005	TF-SED	8/5/2005	METALS
SP-50/SS03	W3	380097	7/28/2005	TF-SED	8/5/2005	METALS
SP-40/SS01	W3	380098	7/28/2005	TF-SED	8/5/2005	METALS
SP-40/SS02; USE SAMPLE FOR MS/MSD	W3	380099	7/28/2005	TF-SED	8/5/2005	METALS
SP-40/SS03	W3	380100	7/28/2005	TF-SED	8/5/2005	METALS
SP-47/SS01	W3	380101	7/28/2005	TF-SED	8/5/2005	METALS
SP-47/SS02	W3	380102	7/28/2005	TF-SED	8/5/2005	METALS
SP-47/SS03; USE SAMPLE FOR MS/MSD	W3	380103	7/28/2005	TF-SED	8/5/2005	METALS
SP-49/SS01	W3	380104	7/28/2005	TF-SED	8/5/2005	METALS
SP-49/SS02	W3	380105	7/28/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-49/SS02	W3	380105	7/28/2005	TF-SED	8/5/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
SP-49/SS03	W3	380106	7/28/2005	TF-SED	8/5/2005	METALS
SP-1013/SS03	W3	380107	7/28/2005	TF-SED	8/5/2005	METALS
SP-12/SS01	W3	380108	7/28/2005	TF-SED	8/5/2005	METALS
SP-1002/SS01	W3	380109	7/28/2005	TF-SED	8/5/2005	METALS
SP-10/SS01	W3	380110	7/28/2005	TF-SED	8/5/2005	METALS
SP-10/SS02	W3	380111	7/28/2005	TF-SED	8/5/2005	METALS
SP-10/SS03; USE SAMPLE FOR CONFIRMATIO	W3	380112	7/28/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-10/SS03; USE SAMPLE FOR CONFIRMATIO	W3	380112	7/28/2005	TF-SED	8/5/2005	METALS
SP-14/SS01	W3	380113	7/28/2005	TF-SED	8/5/2005	METALS
SP-01/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380114	7/28/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-01/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380114	7/28/2005	TF-SED	8/5/2005	METALS
SP-1000/SS01; USE SAMPLE FOR CONFIRMATI	W3	380115	7/28/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-1000/SS01; USE SAMPLE FOR CONFIRMATI	W3	380115	7/28/2005	TF-SED	8/5/2005	METALS
SP-01/SS02	W3	380116	7/28/2005	TF-SED	8/5/2005	METALS
SP-01/SS03; USE SAMPLE FOR MS/MSD	W3	380117	7/28/2005	TF-SED	8/5/2005	METALS
SP-09/SS01	W3	380118	7/28/2005	TF-SED	8/5/2005	METALS
SP-09/SS02	W3	380119	7/28/2005	TF-SED	8/5/2005	METALS
SP-09/SS03	W3	380120	7/28/2005	TF-SED	8/5/2005	METALS
SP-13/SS01	W3	380121	7/28/2005	TF-SED	8/5/2005	METALS
SP-13/SS02	W3	380122	7/28/2005	TF-SED	8/5/2005	METALS
SP-13/SS03	W3	380123	7/28/2005	TF-SED	8/5/2005	METALS
SP-08/SS01	W3	380124	7/28/2005	TF-SED	8/5/2005	METALS
TR-12/SS01	W3	380125	7/28/2005	TF-SED	8/5/2005	METALS
TR-12/SS03	W3	380126	7/28/2005	TF-SED	8/5/2005	METALS
TR-17/SS01	W3	380127	7/28/2005	TF-SED	8/5/2005	METALS
TR-17/SS02	W3	380128	7/28/2005	TF-SED	8/5/2005	METALS
TR-17/SS03	W3	380129	7/28/2005	TF-SED	8/5/2005	METALS
TR-18/SS01	W3	380130	7/28/2005	TF-SED	8/5/2005	METALS
TR-18/SS03	W3	380131	7/28/2005	TF-SED	8/5/2005	METALS
TR-1004/SS03	W3	380132	7/28/2005	TF-SED	8/5/2005	METALS
TR-19/SS01	W3	380133	7/28/2005	TF-SED	8/5/2005	METALS
TR-19/SS02; USE SAMPLE FOR CONFIRMATIO	W3	380134	7/28/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
TR-19/SS02; USE SAMPLE FOR CONFIRMATIO	W3	380134	7/28/2005	TF-SED	8/5/2005	METALS
TR-19/SS03	W3	380135	7/28/2005	TF-SED	8/5/2005	METALS
TR-20/SS1	W3	380136	7/28/2005	TF-SED	8/5/2005	METALS
TR-20/SS3; USE SAMPLE FOR MS/MSD	W3	380137	7/28/2005	TF-SED	8/5/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN DAT	LAB ASSIGNED
TR-21/SS01	W3	380138	7/28/2005	TF-SED	8/5/2005	METALS
TR-21/SS03	W3	380139	7/28/2005	TF-SED	8/5/2005	METALS
SP-05/SS01; USE FOR CONFIRMATION	W3	380140	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-05/SS01; USE FOR CONFIRMATION	W3	380140	7/29/2005	TF-SED	8/5/2005	METALS
SP-06/SS01	W3	380141	7/29/2005	TF-SED	8/5/2005	METALS
SP-06/SS02	W3	380142	7/29/2005	TF-SED	8/5/2005	METALS
SP-06/SS03	W3	380143	7/29/2005	TF-SED	8/5/2005	METALS
SP-1001/SS02	W3	380144	7/29/2005	TF-SED	8/5/2005	METALS
SP-07/SS01	W3	380145	7/29/2005	TF-SED	8/5/2005	METALS
SP-23/SS01	W3	380146	7/29/2005	TF-SED	8/5/2005	METALS
SP-23/SS02	W3	380147	7/29/2005	TF-SED	8/5/2005	METALS
SP-23/SS03	W3	380148	7/29/2005	TF-SED	8/5/2005	METALS
SP-22/SS01; USE FOR CONFIRMATION	W3	380149	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-22/SS01; USE FOR CONFIRMATION	W3	380149	7/29/2005	TF-SED	8/5/2005	METALS
SP-22/SS02	W3	380150	7/29/2005	TF-SED	8/5/2005	METALS
SP-22/SS03	W3	380151	7/29/2005	TF-SED	8/5/2005	METALS
SP-1005/SS02	W3	380152	7/29/2005	TF-SED	8/5/2005	METALS
SP-21/SS01	W3	380153	7/29/2005	TF-SED	8/5/2005	METALS
SP-21/SS02	W3	380154	7/29/2005	TF-SED	8/5/2005	METALS
SP-21/SS03	W3	380155	7/29/2005	TF-SED	8/5/2005	METALS
SP-20/SS01; USE FOR MS/MSD	W3	380156	7/29/2005	TF-SED	8/5/2005	METALS
SP-20/SS02	W3	380157	7/29/2005	TF-SED	8/5/2005	METALS
SP-20/SS03	W3	380158	7/29/2005	TF-SED	8/5/2005	METALS
SP-26/SS01	W3	380159	7/29/2005	TF-SED	8/5/2005	METALS
SP-26/SS02; USE FOR MS/MSD	W3	380160	7/29/2005	TF-SED	8/5/2005	METALS
SP-26/SS03	W3	380161	7/29/2005	TF-SED	8/5/2005	METALS
SP-25/SS01	W3	380162	7/29/2005	TF-SED	8/5/2005	METALS
SP-25/SS02; CONFIRMATION	W3	380163	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-25/SS02; CONFIRMATION	W3	380163	7/29/2005	TF-SED	8/5/2005	METALS
SP-25/SS03	W3	380164	7/29/2005	TF-SED	8/5/2005	METALS
SP-1006/SS02; USE FOR CONFIRMATION	W3	380165	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-1006/SS02; USE FOR CONFIRMATION	W3	380165	7/29/2005	TF-SED	8/5/2005	METALS
SP-24/SS01	W3	380166	7/29/2005	TF-SED	8/5/2005	METALS
SP-24/SS02	W3	380167	7/29/2005	TF-SED	8/5/2005	METALS
SP-24/SS03	W3	380168	7/29/2005	TF-SED	8/5/2005	METALS
SP-39/SS01	W3	380169	7/29/2005	TF-SED	8/5/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
SP-39/SS02; USE FOR CONFIRMATION	W3	380170	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-39/SS02; USE FOR CONFIRMATION	W3	380170	7/29/2005	TF-SED	8/5/2005	METALS
SP-39/SS03	W3	380171	7/29/2005	TF-SED	8/5/2005	METALS
SP-1010/SS03	W3	380172	7/29/2005	TF-SED	8/5/2005	METALS
SP-19/SS01	W3	380173	7/29/2005	TF-SED	8/5/2005	METALS
SP-19/SS02	W3	380174	7/29/2005	TF-SED	8/5/2005	METALS
SP-19/SS03	W3	380175	7/29/2005	TF-SED	8/5/2005	METALS
SP-1004/SS01	W3	380176	7/29/2005	TF-SED	8/5/2005	METALS
SP-27/SS01	W3	380177	7/29/2005	TF-SED	8/5/2005	METALS
SP-27/SS02	W3	380178	7/29/2005	TF-SED	8/5/2005	METALS
SP-27/SS03	W3	380179	7/29/2005	TF-SED	8/5/2005	METALS
SP-18/SS01	W3	380180	7/29/2005	TF-SED	8/5/2005	METALS
SP-18/SS02	W3	380181	7/29/2005	TF-SED	8/5/2005	METALS
SP-18/SS03; USE FOR CONFIRMATION	W3	380182	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-18/SS03; USE FOR CONFIRMATION	W3	380182	7/29/2005	TF-SED	8/5/2005	METALS
SP-17/SS01	W3	380183	7/29/2005	TF-SED	8/5/2005	METALS
SP-17/SS02	W3	380184	7/29/2005	TF-SED	8/5/2005	METALS
SP-17/SS03	W3	380185	7/29/2005	TF-SED	8/5/2005	METALS
SP-16/SS01	W3	380186	7/29/2005	TF-SED	8/5/2005	METALS
SP-16/SS02	W3	380187	7/29/2005	TF-SED	8/5/2005	METALS
SP-16/SS03	W3	380188	7/29/2005	TF-SED	8/5/2005	METALS
SP-1003/SS03	W3	380189	7/29/2005	TF-SED	8/5/2005	METALS
SP-29/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380190	7/29/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-29/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380190	7/29/2005	TF-SED	8/5/2005	METALS
SP-29/SS02	W3	380191	7/29/2005	TF-SED	8/5/2005	METALS
SP-29/SS03	W3	380192	7/29/2005	TF-SED	8/5/2005	METALS
SP-1007/SS02	W3	380193	7/29/2005	TF-SED	8/5/2005	METALS
SP-32/SS01	W3	380194	8/1/2005	TF-SED	8/5/2005	METALS
SP-32/SS02; USE SAMPLE FOR CONFIRMATIO	W3	380195	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-32/SS02; USE SAMPLE FOR CONFIRMATIO	W3	380195	8/1/2005	TF-SED	8/5/2005	METALS
SP-32/SS03	W3	380196	8/1/2005	TF-SED	8/5/2005	METALS
SP-1008/SS03	W3	380197	8/1/2005	TF-SED	8/5/2005	METALS
SP-38/SS01	W3	380198	8/1/2005	TF-SED	8/5/2005	METALS
SP-38/SS02	W3	380199	8/1/2005	TF-SED	8/5/2005	METALS
SP-48/SS01	W3	380200	7/28/2005	TF-SED	8/5/2005	METALS
SP-48/SS02	W3	380201	7/28/2005	TF-SED	8/5/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
SP-48/SS03	W3	380202	7/28/2005	TF-SED	8/5/2005	METALS
SP-11/SS01	W3	380203	7/28/2005	TF-SED	8/5/2005	METALS
SP-11/SS02	W3	380204	7/28/2005	TF-SED	8/5/2005	METALS
SP-11/SS03; USE SAMPLE FOR MS/MSD	W3	380205	7/28/2005	TF-SED	8/5/2005	METALS
SP-30/SS01	W3	380206	8/1/2005	TF-SED	8/5/2005	METALS
SP-30/SS02	W3	380207	8/1/2005	TF-SED	8/5/2005	METALS
SP-30/SS03	W3	380208	8/1/2005	TF-SED	8/5/2005	METALS
SP-31/SS01	W3	380209	8/1/2005	TF-SED	8/5/2005	METALS
SP-31/SS02	W3	380210	8/1/2005	TF-SED	8/5/2005	METALS
SP-31/SS03	W3	380211	8/1/2005	TF-SED	8/5/2005	METALS
SP-37/SS01	W3	380212	8/1/2005	TF-SED	8/5/2005	METALS
SP-37/SS02	W3	380213	8/1/2005	TF-SED	8/5/2005	METALS
SP-37/SS03	W3	380214	8/1/2005	TF-SED	8/5/2005	METALS
SP-28/SS01	W3	380215	8/1/2005	TF-SED	8/5/2005	METALS
SP-28/SS02	W3	380216	8/1/2005	TF-SED	8/5/2005	METALS
SP-28/SS03	W3	380217	8/1/2005	TF-SED	8/5/2005	METALS
SP-36/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380218	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-36/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380218	8/1/2005	TF-SED	8/5/2005	METALS
SP-36/SS02	W3	380219	8/1/2005	TF-SED	8/5/2005	METALS
SP-1009/SS02	W3	380220	8/1/2005	TF-SED	8/5/2005	METALS
SP-36/SS03	W3	380221	8/1/2005	TF-SED	8/5/2005	METALS
SP-35/SS01	W3	380222	8/1/2005	TF-SED	8/5/2005	METALS
SP-35/SS02	W3	380223	8/1/2005	TF-SED	8/5/2005	METALS
SP-35/SS03	W3	380224	8/1/2005	TF-SED	8/5/2005	METALS
SP-34/SS01	W3	380225	8/1/2005	TF-SED	8/5/2005	METALS
SP-34/SS02	W3	380226	8/1/2005	TF-SED	8/5/2005	METALS
SP-34/SS03	W3	380227	8/1/2005	TF-SED	8/5/2005	METALS
SP-38/SS03	W3	380228	8/1/2005	TF-SED	8/5/2005	METALS
SP-41/SS01	W3	380229	8/1/2005	TF-SED	8/5/2005	METALS
SP-42/SS01	W3	380230	8/1/2005	TF-SED	8/5/2005	METALS
SP-42/SS02	W3	380231	8/1/2005	TF-SED	8/5/2005	METALS
SP-42/SS03; USE SAMPLE FOR CONFIRMATIO	W3	380232	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-42/SS03; USE SAMPLE FOR CONFIRMATIO	W3	380232	8/1/2005	TF-SED	8/5/2005	METALS
SP-43/SS01	W3	380233	8/1/2005	TF-SED	8/5/2005	METALS
SP-1011/SS01	W3	380234	8/1/2005	TF-SED	8/5/2005	METALS
SP-43/SS02	W3	380235	8/1/2005	TF-SED	8/5/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
SP-43/SS03	W3	380236	8/1/2005	TF-SED	8/5/2005	METALS
SP-45/SS01	W3	380237	8/1/2005	TF-SED	8/5/2005	METALS
SP-45/SS02	W3	380238	8/1/2005	TF-SED	8/5/2005	METALS
SP-45/SS03	W3	380239	8/1/2005	TF-SED	8/5/2005	METALS
SP-46/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380240	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-46/SS01; USE SAMPLE FOR CONFIRMATIO	W3	380240	8/1/2005	TF-SED	8/5/2005	METALS
SP-46/SS02	W3	380241	8/1/2005	TF-SED	8/5/2005	METALS
SP-1012/SS02	W3	380242	8/1/2005	TF-SED	8/5/2005	METALS
SP-46/SS03	W3	380243	8/1/2005	TF-SED	8/5/2005	METALS
SP-44/SS01	W3	380244	8/1/2005	TF-SED	8/5/2005	METALS
SP-02/SS01	W3	380245	7/28/2005	TF-SED	8/5/2005	METALS
SP-03/SS01	W3	380246	7/28/2005	TF-SED	8/5/2005	METALS
SP-03/SS02	W3	380247	7/28/2005	TF-SED	8/5/2005	METALS
SP-03/SS03	W3	380248	7/28/2005	TF-SED	8/5/2005	METALS
SP-04/SS01	W3	380249	7/28/2005	TF-SED	8/5/2005	METALS
SP-15/SS01	W3	380250	7/28/2005	TF-SED	8/5/2005	METALS
SP-33/SS01; USE FOR MS/MSD	W3	380251	8/1/2005	TF-SED	8/5/2005	METALS
SP-33/SS02	W3	380252	8/1/2005	TF-SED	8/5/2005	METALS
SP-33/SS03	W3	380253	8/1/2005	TF-SED	8/5/2005	METALS
SP-41/SS02	W3	380254	8/1/2005	TF-SED	8/5/2005	METALS
SP-41/SS03	W3	380255	8/1/2005	TF-SED	8/5/2005	METALS
SP-44/SS02	W3	380256	8/1/2005	TF-SED	8/5/2005	METALS
SP-44/SS03	W3	380257	8/1/2005	TF-SED	8/5/2005	METALS
SP-51/SS01	W3	380258	8/1/2005	TF-SED	8/5/2005	METALS
SP-51/SS02	W3	380259	8/1/2005	TF-SED	8/5/2005	METALS
SP-51/SS03	W3	380260	8/1/2005	TF-SED	8/5/2005	METALS
SP-52/SS01	W3	380261	8/1/2005	TF-SED	8/5/2005	METALS
SP-52/SS02	W3	380262	8/1/2005	TF-SED	8/5/2005	METALS
SP-52/SS03	W3	380263	8/1/2005	TF-SED	8/5/2005	METALS
SP-53/SS01; USE FOR CONFIRMATION	W3	380264	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-53/SS01; USE FOR CONFIRMATION	W3	380264	8/1/2005	TF-SED	8/5/2005	METALS
SP-1014/ SS01; USE FOR CONFIRMATION	W3	380265	8/1/2005	TF-SED	8/5/2005	GENERAL CHEMISTRY
SP-1014/ SS01; USE FOR CONFIRMATION	W3	380265	8/1/2005	TF-SED	8/5/2005	METALS
SP-53/SS02	W3	380266	8/1/2005	TF-SED	8/5/2005	METALS
SP-53/SS03	W3	380267	8/1/2005	TF-SED	8/5/2005	METALS
PZ-04/SS01	W4	381328	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
PZ-04/SS02	W4	381329	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	METALS
PZ-04/SS03	W4	381330	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	METALS
PZ-04/SS04; USE FOR MS/MSD & CONFIRMAT	W4	381331	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	GENERAL CHEMISTRY
PZ-04/SS04; USE FOR MS/MSD & CONFIRMAT	W4	381331	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	METALS
PZ-04/SS05	W4	381332	8/2/2005	TF-SED	8/19/2005 2:56:26 PM	METALS
PZ-07/SS01	W4	381333	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-07/SS02	W4	381334	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-07/SS03; USE FOR CONFIRMATION	W4	381335	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	GENERAL CHEMISTRY
PZ-07/SS03; USE FOR CONFIRMATION	W4	381335	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-07/SS04	W4	381336	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-07/SS05	W4	381337	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-1000/SS02	W4	381338	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-09/SS01	W4	381339	8/2/2005	TF-SED	8/19/2005 3:01:49 PM	METALS
PZ-09/SS02	W4	381340	8/2/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
PZ-09/SS04	W4	381341	8/2/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
PZ-1002/SS04	W4	381342	8/2/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-06/SS01	W4	381343	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-01/SS02; USE FOR CONFIRMATION & M	W4	381344	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	GENERAL CHEMISTRY
BG-SP-01/SS02; USE FOR CONFIRMATION & M	W4	381344	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-01/SS03	W4	381345	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-02/SS01	W4	381346	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-02/SS02	W4	381347	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
BG-SP-02/SS03	W4	381348	8/16/2005	TF-SED	8/19/2005 3:07:36 PM	METALS
OSL-35/SS01	W5	382553	8/24/2005	TF-SED	9/9/2005	METALS
OSL-33/SS01	W5	382554	8/25/2005	TF-SED	9/9/2005	METALS
OSL-07/SS01	W5	382555	8/25/2005	TF-SED	9/9/2005	METALS
OSL-08/SS01	W5	382556	8/25/2005	TF-SED	9/9/2005	METALS
OSL-03/SS01	W5	382557	8/25/2005	TF-SED	9/9/2005	METALS
OSL-21/SS01; USE FOR LAB DUP	W5	382558	8/26/2005	TF-SED	9/9/2005	METALS
OSL- 14/SS01	W5	382559	8/26/2005	TF-SED	9/9/2005	METALS
OSL- 34/SS01	W5	382560	8/26/2005	TF-SED	9/9/2005	METALS
OSL- 57/SS01	W5	382561	8/27/2005	TF-SED	9/9/2005	METALS
OSL- 58/SS01	W5	382562	8/27/2005	TF-SED	9/9/2005	METALS
OSL- 53/SS01	W5	382563	8/28/2005	TF-SED	9/9/2005	METALS
OSL- 78/SS01	W5	382564	8/29/2005	TF-SED	9/9/2005	METALS
TSL-05/SS01	W5	382565	8/29/2005	TF-SED	9/9/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
OSL-25/SS01	W5	382566	8/29/2005	TF-SED	9/9/2005	METALS
OSL-12/SS01; USE FOR CONFIRMATION	W5	382567	8/29/2005	TF-SED	9/9/2005	METALS
OSL-46/SS01	W5	382568	8/29/2005	TF-SED	9/9/2005	METALS
TRB-10/SS01; USE FOR CONFIRMATION	W5	382569	8/29/2005	TF-SED	9/9/2005	METALS
OSL-47/SS01	W5	382570	8/29/2005	TF-SED	9/9/2005	METALS
OSL-41/SS01	W5	382571	8/29/2005	TF-SED	9/9/2005	METALS
OSL-40/SS01	W5	382572	8/29/2005	TF-SED	9/9/2005	METALS
OSL-69/SS01; USE FOR CONFIRMATION, MS/	W5	382573	8/29/2005	TF-SED	9/9/2005	METALS
OSL-68/SS01	W5	382574	8/29/2005	TF-SED	9/9/2005	METALS
TRB-1000/SS01; USE FOR CONFIRMATION	W5	382575	8/29/2005	TF-SED	9/9/2005	METALS
OSL-1003/SS01	W5	382576	8/29/2005	TF-SED	9/9/2005	METALS
OSL-1004/SS01	W5	382577	8/29/2005	TF-SED	9/9/2005	METALS
OSL-19/SS01	W5	382578	9/7/2005	TF-SED	9/9/2005	METALS
OSL-96/SS01	W5	382579	8/30/2005	TF-SED	9/9/2005	METALS
OSL-97A/SS01	W5	382580	8/30/2005	TF-SED	9/9/2005	METALS
OSL-97B/SS01	W5	382581	8/30/2005	TF-SED	9/9/2005	METALS
TSL-03/SS01	W5	382582	8/30/2005	TF-SED	9/9/2005	METALS
OSL-04/SS01	W5	382583	8/30/2005	TF-SED	9/9/2005	METALS
TSL-04/SS01; USE FOR CONFIRMATION	W5	382584	8/30/2005	TF-SED	9/9/2005	METALS
OSL-06/SS01	W5	382585	8/30/2005	TF-SED	9/9/2005	METALS
OSL-29/SS01	W5	382586	8/30/2005	TF-SED	9/9/2005	METALS
OSL-94/SS01	W5	382587	8/30/2005	TF-SED	9/9/2005	METALS
OSL-94DW/GRAB	W5	382588	8/30/2005	TF-SED	9/9/2005	METALS
TRB-04/SS01	W5	382589	8/30/2005	TF-SED	9/9/2005	METALS
OSL-27/SS01; USE FOR LAB DUP	W5	382590	8/30/2005	TF-SED	9/9/2005	METALS
OSL-98/SS01	W5	382591	8/30/2005	TF-SED	9/9/2005	METALS
OSL-73/SS01	W5	382592	8/30/2005	TF-SED	9/9/2005	METALS
OSL-59/SS01	W5	382593	8/30/2005	TF-SED	9/9/2005	METALS
OSL-61/SS01	W5	382594	8/30/2005	TF-SED	9/9/2005	METALS
TRB-09/SS01; USE FOR LAB DUP	W5	382595	8/30/2005	TF-SED	9/9/2005	METALS
TRB-08/SS01	W5	382596	8/30/2005	TF-SED	9/9/2005	METALS
TRB-09DW/GRAB	W5	382597	8/30/2005	TF-SED	9/9/2005	METALS
TSL-02/SS01	W5	382598	8/30/2005	TF-SED	9/9/2005	METALS
TSL-01/SS01	W5	382599	8/30/2005	TF-SED	9/9/2005	METALS
OSL-02/SS01	W5	382600	8/30/2005	TF-SED	9/9/2005	METALS
OSL-01/SS01; USE FOR CONFIRMATION	W5	382601	8/30/2005	TF-SED	9/9/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
OSL-95/SS01	W5	382602	8/30/2005	TF-SED	9/9/2005	METALS
TSL-1000/SS01; USE FOR CONFIRMATION	W5	382603	8/30/2005	TF-SED	9/9/2005	METALS
OSL-1005/SS01	W5	382604	8/30/2005	TF-SED	9/9/2005	METALS
OSL-17/SS01; USE FOR CONFIRMATION	W5	382605	8/31/2005	TF-SED	9/9/2005	METALS
OSL-99/SS01	W5	382606	8/31/2005	TF-SED	9/9/2005	METALS
OSL-31/SS01	W5	382607	8/31/2005	TF-SED	9/9/2005	METALS
OSL-55/SS01	W5	382608	8/31/2005	TF-SED	9/9/2005	METALS
OSL-64/SS01	W5	382609	8/31/2005	TF-SED	9/9/2005	METALS
BG-OSL-01/SS01; USE FOR CONFIRMATION	W5	382610	8/31/2005	TF-SED	9/9/2005	METALS
TSL-07/SS01	W5	382611	8/31/2005	TF-SED	9/9/2005	METALS
OSL-65/SS01	W5	382612	8/31/2005	TF-SED	9/9/2005	METALS
OSL-67/SS01	W5	382613	8/31/2005	TF-SED	9/9/2005	METALS
OSL-66/SS01	W5	382614	8/31/2005	TF-SED	9/9/2005	METALS
OSL-49/SS01	W5	382615	8/31/2005	TF-SED	9/9/2005	METALS
TSL-06/SS01; USE FOR LAB DUP	W5	382616	8/31/2005	TF-SED	9/9/2005	METALS
OSL-63/SS01; USE FOR LAB DUP	W5	382617	8/31/2005	TF-SED	9/9/2005	METALS
OSL-56/SS01	W5	382618	8/31/2005	TF-SED	9/9/2005	METALS
OSL-50/SS01; USE FOR CONFIRMATION	W5	382619	8/31/2005	TF-SED	9/9/2005	METALS
OSL-36/SS01	W5	382620	8/31/2005	TF-SED	9/9/2005	METALS
OSL-48/SS01	W5	382621	8/31/2005	TF-SED	9/9/2005	METALS
OSL-54/SS01	W5	382622	8/31/2005	TF-SED	9/9/2005	METALS
OSL-39/SS01; USE FOR CONFIRMATION	W5	382623	8/31/2005	TF-SED	9/9/2005	METALS
OSL-38/SS01	W5	382624	8/31/2005	TF-SED	9/9/2005	METALS
TRB-01/SS01	W5	382625	8/31/2005	TF-SED	9/9/2005	METALS
OSL-37/SS01	W5	382626	8/31/2005	TF-SED	9/9/2005	METALS
OSL-36DW/GRAB	W5	382627	8/31/2005	TF-SED	9/9/2005	METALS
OSL-1000/SS01; USE FOR CONFIRMATION	W5	382628	8/31/2005	TF-SED	9/9/2005	METALS
OSL-1001/SS01; USE FOR CONFIRMATION	W5	382629	8/31/2005	TF-SED	9/9/2005	METALS
OSL-1002/SS01; USE FOR CONFIRMATION	W5	382630	8/31/2005	TF-SED	9/9/2005	METALS
BG-OSL-02/SS01	W-6	383117	9/13/2005	TF-SED	9/14/2005	METALS
TRB-11/SS01	W-6	383118	9/13/2005	TF-SED	9/14/2005	METALS
BG-OFF-02/SD01	W-6	383119	9/13/2005	TF-SED	9/14/2005	METALS
PZ-01/GW01; 500ML COLLECTED BEFORE GOIN	W-6	383120	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-02/GW01; 500ML COLLECTED BEFORE GOIN	W-6	383121	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-03/GW01; 500ML FOR ICP; ONLY TOC FOR G	W-6	383122	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-03/GW01; 500ML FOR ICP; ONLY TOC FOR G	W-6	383122	9/13/2005	TF-LIQ	9/14/2005	METALS

SITE ID	WEEK RECEIVED	SAMPLE ID	DATE SAMPLED	PROJECT CODE	LOGIN_DAT	LAB ASSIGNED
PZ-04/GW01; 500ML FOR ICP; ONLY TOC FOR G	W-6	383123	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-04/GW01; 500ML FOR ICP; ONLY TOC FOR G	W-6	383123	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-05/GW01; 400 ML FOR ICP	W-6	383124	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-06/GW01; 500 ML FOR ICP	W-6	383125	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-07/GW01	W-6	383126	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-07/GW01	W-6	383126	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-08/GW01	W-6	383127	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-08/GW01	W-6	383127	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-09/GW01; USE FOR MS/MSD	W-6	383128	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-09/GW01; USE FOR MS/MSD	W-6	383128	9/13/2005	TF-LIQ	9/14/2005	METALS
BG-OFF-02/SW01	W-6	383129	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
BG-OFF-02/SW01	W-6	383129	9/13/2005	TF-LIQ	9/14/2005	METALS
PZ-1001/GW01	W-6	383130	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PZ-1001/GW01	W-6	383130	9/13/2005	TF-LIQ	9/14/2005	METALS
PDI-02A/SW01; USE FOR MS/MSD	W-6	383131	9/13/2005	TF-LIQ	9/14/2005	GENERAL CHEMISTRY
PDI-02A/SW01; USE FOR MS/MSD	W-6	383131	9/13/2005	TF-LIQ	9/14/2005	METALS
BG-OFF-01/SD01	W-7	384385	9/29/2005	TF-SED	9/30/2005	METALS
BG-OFF-1000/SD01	W-7	384386	9/29/2005	TF-SED	9/30/2005	METALS
BG-OFF-01/SW01	W-7	384387	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
BG-OFF-01/SW01	W-7	384387	9/29/2005	TF-LIQ	9/30/2005	METALS
BG-OFF-1000/SW01	W-7	384388	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
BG-OFF-1000/SW01	W-7	384388	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-01/GW01	W-7	384389	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
MW-01/GW01	W-7	384389	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-02/GW01	W-7	384390	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-03/GW01	W-7	384391	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
MW-03/GW01	W-7	384391	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-04/GW01; USE FOR MS/MSD	W-7	384392	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
MW-04/GW01; USE FOR MS/MSD	W-7	384392	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-05/GW01; FILTERED	W-7	384393	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-05/GW01; UNFILTERED	W-7	384394	9/29/2005	TF-LIQ	9/30/2005	METALS
MW-1000/GW01	W-7	384395	9/29/2005	TF-LIQ	9/30/2005	GENERAL CHEMISTRY
MW-1000/GW01	W-7	384395	9/29/2005	TF-LIQ	9/30/2005	METALS
RW-01/GW01	W-8	384442	10/3/2005	TF-LIQ	10/4/2005 1:40:58 PM	GENERAL CHEMISTRY
RW-01/GW01	W-8	384442	10/3/2005	TF-LIQ	10/4/2005 1:40:58 PM	METALS

Oklahoma SEL

Analytical Data

RI Phase I

Aqueous Data

Samples for Metals and General Chemistry Analysis

RI Phase I

Water

ICP Metals

Sample Number: 378844
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0805
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE					Page 1 of 1
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		9	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

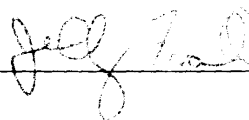
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
EQUIPMENT RINSATE BLANK OF PONAR SAMPLING DEVICE

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378845
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0939
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

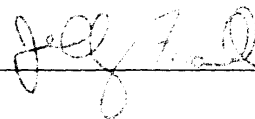
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-06/SW01

ANALYST'S COMMENTS:

*
ANALYST



Sample Number: 378846
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0959
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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Report of Analysis by Metals

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-05/ SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378847
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1014
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

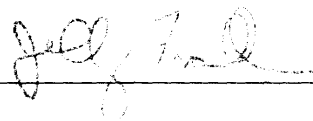
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-04/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378848
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1044
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-03/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378849
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1044
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-1000/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378850
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1122
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-02/SW01

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 378851
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1143
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
SMP-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378852
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0723
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		64	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378853
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0740
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		33	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-02/SW01;SAMPLE LOCATION CHOSEN AS MATRIX SPIKE;MATRIX SPIKE DUPLICATE

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378854
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0740
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		33	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-02/SW01MS; USE THESE BOTTLES FOR SITE SPECIFIC MSD

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378855
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		51	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-02/SD01MSD; USE THESE BOTTLES FOR SITE SPECIFIC MSD

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378856
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0810
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		63	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-03/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378857
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0837
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		17	UG/L	07/27/05	200.7
Cadmium, Total		12.	UG/L	07/27/05	200.7
Lead, Total		75.0	UG/L	07/27/05	200.7
Zinc, Total		781	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PD2-02/SW01

ANALYST'S COMMENTS:

*

ANALYST Jeffrey

Sample Number: 378858
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0848
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total		22.	UG/L	07/27/05	200.7
Lead, Total		17.0	UG/L	07/27/05	200.7
Zinc, Total		299	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PD2-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378859
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0911
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		67	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PD3-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378860
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0911
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total		8.	UG/L	07/27/05	200.7
Lead, Total		30.0	UG/L	07/27/05	200.7
Zinc, Total		375	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PD3-1000/SW01

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 378861
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0920
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total		28	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PD3-02/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378862
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1113
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total		26.0	UG/L	07/27/05	200.7
Zinc, Total		186	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
OFF-02/SW01

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 378863
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total		15.0	UG/L	07/27/05	200.7
Zinc, Total		290	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

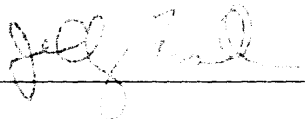
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
OFF-04/SW01;THIS SAMPLE LOCATION WAS CHOSEN FOR SITE SPECIFIC MS/MSD

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378864
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total		15.0	UG/L	07/27/05	200.7
Zinc, Total		359	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

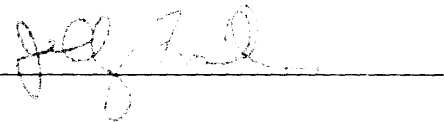
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
OFF-04/SW01MS;USE THES BOTTLES FOR SITE SPECIFIC MATRIX SPIKE PARENT SAMPLE OFF-04-SW01

ANALYST`S COMMENTS:

*
ANALYST



Sample Number: 378865
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total		12.0	UG/L	07/27/05	200.7
Zinc, Total		238	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
OFF-04/SW01MSD;USE THES BOTTLES FOR SITE SPECIFIC MATRIX SPIKE DUP PARENT SAMPLE
OFF-04-SW01

ANALYST`S COMMENTS:

*

ANALYST



Sample Number: 378866
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1454
Date Received: 07/21/2005
Date Completed: 08/02/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 08/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	07/27/05	200.7
Cadmium, Total	<	5.	UG/L	07/27/05	200.7
Lead, Total	<	10.0	UG/L	07/27/05	200.7
Zinc, Total	<	5	UG/L	07/27/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

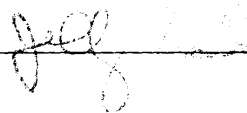
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
RINSATE-02;EQUIPMENT RINSATE BLANK OF SAMPLING SPOON

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 379557
Agency Number:
Date Collected: 07/21/2005
Time Collected: 0848
Date Received: 07/29/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		149	UG/L	10/18/05	200.7
Cadmium, Total		810.	UG/L	10/18/05	200.7
Lead, Total		2560.0	UG/L	10/18/05	200.7
Zinc, Total		61300	UG/L	10/18/05	200.7

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
OFF-09/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383120
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0716
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		17	UG/L	10/18/05	200.7
Cadmium, Total		18.	UG/L	10/18/05	200.7
Lead, Total		607.0	UG/L	10/18/05	200.7
Zinc, Total		1940	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

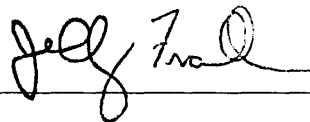
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-01/GW01; 500ML COLLECTED BEFORE GOING DRY

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383121
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0758
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		12.0	UG/L	10/18/05	200.7
Zinc, Total		86	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

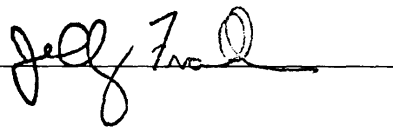
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-02/GW01; 500ML COLLECTED BEFORE GOING DRY

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383122
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0838
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		40.0	UG/L	10/18/05	200.7
Zinc, Total		213	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

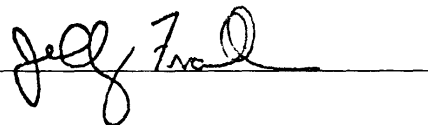
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-03/GW01; 500ML FOR ICP;ONLY TOC FOR GEN CHEM

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383123
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0908
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		31.0	UG/L	10/18/05	200.7
Zinc, Total		183	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

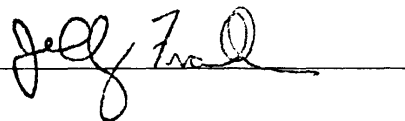
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-04/GW01; 500ML FOR ICP;ONLY TOC FOR GEN CHEM

ANALYST`S COMMENTS:

*

ANALYST



Sample Number: 383124
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0937
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total		78	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

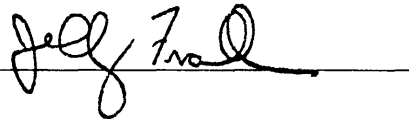
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-05/GW01; 400 ML FOR ICP

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383125
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0958
Date Received: 09/14/2005
Date Completed: 10/18/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/18/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total		8.	UG/L	10/18/05	200.7
Lead, Total		59.0	UG/L	10/18/05	200.7
Zinc, Total		928	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

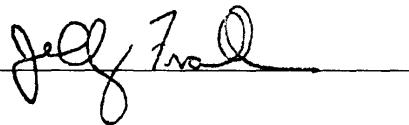
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-06/GW01; 500 ML FOR ICP

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383126
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1018
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		17	UG/L	10/18/05	200.7
Cadmium, Total		99.	UG/L	10/18/05	200.7
Lead, Total		946.0	UG/L	10/18/05	200.7
Zinc, Total		3880	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

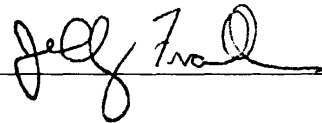
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-07/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383127
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1112
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total		20.	UG/L	10/18/05	200.7
Lead, Total		148.0	UG/L	10/18/05	200.7
Zinc, Total		1030	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

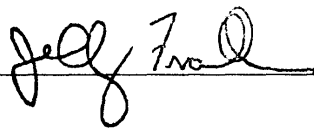
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-08/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383128
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1137
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		12	UG/L	10/18/05	200.7
Cadmium, Total		178.	UG/L	10/18/05	200.7
Lead, Total		371.0	UG/L	10/18/05	200.7
Zinc, Total		8920	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

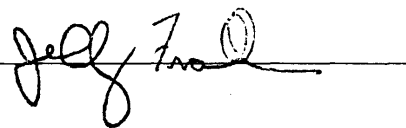
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-09/GW01; USE FOR MS/MSD

ANALYST`S COMMENTS:

*

ANALYST



Sample Number: 383129
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1450
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total	<	5	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

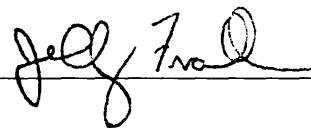
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
BG-OFF-02/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383130
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1137
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total		133.	UG/L	10/18/05	200.7
Lead, Total		25.0	UG/L	10/18/05	200.7
Zinc, Total		6520	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

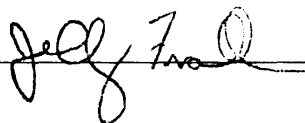
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PZ-1001/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383131
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1640
Date Received: 09/14/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total		37.	UG/L	10/18/05	200.7
Lead, Total		56.0	UG/L	10/18/05	200.7
Zinc, Total		1250	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

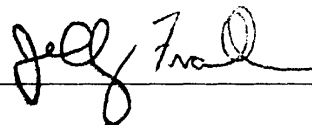
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
PDI-02A/SW01; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384387
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1028
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total	<	5	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

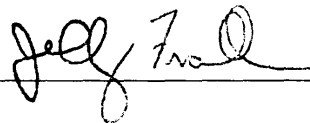
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
BG-OFF-01/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384388
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1028
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total	<	5	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

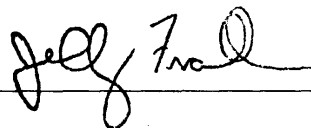
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
BG-OFF-1000/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384389
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1135
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total		68	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

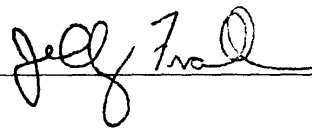
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-01/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384390
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1230
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total		440	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

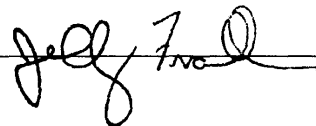
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-02/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384391
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1629
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		87.0	UG/L	10/18/05	200.7
Zinc, Total		190	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

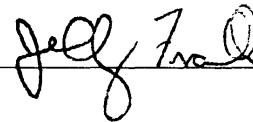
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-03/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384392
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1411
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total		105.	UG/L	10/18/05	200.7
Lead, Total		13.0	UG/L	10/18/05	200.7
Zinc, Total		4900	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

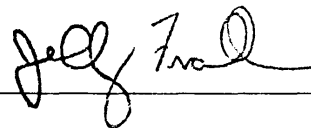
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-04/GW01; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384393
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1456
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total	<	10.0	UG/L	10/18/05	200.7
Zinc, Total		27	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

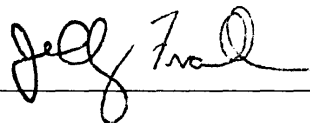
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-05/GW01; FILTERED

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384394
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1456
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		17	UG/L	10/18/05	200.7
Cadmium, Total		13.	UG/L	10/18/05	200.7
Lead, Total		58.0	UG/L	10/18/05	200.7
Zinc, Total		609	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

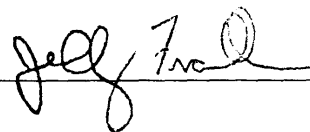
LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-05/GW01; UNFILTERED

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 384395
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1629
Date Received: 09/30/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		233.0	UG/L	10/18/05	200.7
Zinc, Total		533	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

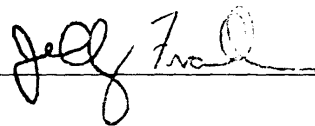
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
MW-1000/GW01

ANALYST'S COMMENTS:

*
ANALYST



Sample Number: 384442
Agency Number:
Date Collected: 10/03/2005
Time Collected: 1443
Date Received: 10/04/2005
Date Completed: 10/19/2005
PWS Id:
Location Code: W-8
Station:
Facility:
Collected By: DSB
Report Date: 10/19/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10	UG/L	10/18/05	200.7
Cadmium, Total	<	5.	UG/L	10/18/05	200.7
Lead, Total		28.0	UG/L	10/18/05	200.7
Zinc, Total		1030	UG/L	10/18/05	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

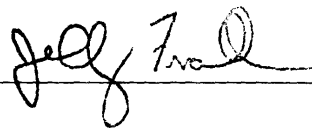
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: METALS;

SAMPLERS COMMENTS:
RW-01/GW01

ANALYST'S COMMENTS:

*
ANALYST



RI Phase I

Water

General Chemistry

Sample Number: 378845
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0939
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		23.8	MG/L	08/02/05	410.3
Alkalinity, Total		158	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		4.95	MG/L	07/25/05	5310 C
Chloride		23.5	MG/L	08/08/05	325.2
Sulfate		712.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

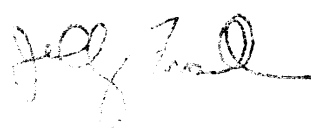
LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-06/SW01

ANALYST'S COMMENTS:

ANALYST



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Sample Number: 378846
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0959
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		23.3	MG/L	08/02/05	410.3
Alkalinity, Total		159	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.14	MG/L	07/25/05	5310 C
Chloride		23.7	MG/L	08/08/05	325.2
Sulfate		714.	MG/L	08/08/05	375.4

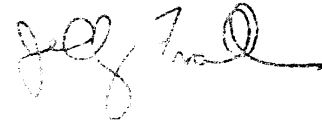
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-05/ SW01

ANALYST'S COMMENTS:



ANALYST _____

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Sample Number: 378847
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1014
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		25.8	MG/L	08/02/05	410.3
Alkalinity, Total		160	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.18	MG/L	07/25/05	5310 C
Chloride		23.6	MG/L	08/08/05	325.2
Sulfate		703.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

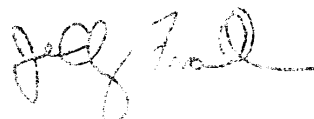
LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-04/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378848
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1044
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		21.3	MG/L	08/02/05	410.3
Alkalinity, Total		158	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.09	MG/L	07/25/05	5310 C
Chloride		23.7	MG/L	08/08/05	325.2
Sulfate		743.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-03/SW01

ANALYST'S COMMENTS:

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ANALYST 

Sample Number: 378849
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1044
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		26.3	MG/L	08/02/05	410.3
Alkalinity, Total		158	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.24	MG/L	07/25/05	5310 C
Chloride		23.5	MG/L	08/08/05	325.2
Sulfate		739.	MG/L	08/08/05	375.4

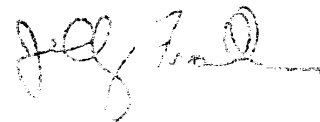
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-1000/SW01

ANALYST'S COMMENTS:



ANALYST _____

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Sample Number: 378850
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1122
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		20.8	MG/L	08/02/05	410.3
Alkalinity, Total		159	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.23	MG/L	07/25/05	5310 C
Chloride		23.5	MG/L	08/08/05	325.2
Sulfate		714.	MG/L	08/08/05	375.4

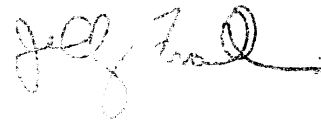
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-02/SW01

ANALYST'S COMMENTS:



ANALYST _____

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Sample Number: 378851
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1143
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		13.4	MG/L	08/02/05	410.3
Alkalinity, Total		160	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		5.24	MG/L	07/25/05	5310 C
Chloride		23.8	MG/L	08/08/05	325.2
Sulfate		693.	MG/L	08/08/05	375.4

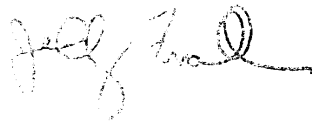
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
SMP-01/SW01

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 378852
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0723
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		159	MG/L	08/02/05	410.3
Alkalinity, Total		123	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		17.80	MG/L	08/03/05	5310 C
Chloride		16.4	MG/L	08/08/05	325.2
Sulfate		11.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-01/SW01

ANALYST'S COMMENTS:

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ANALYST 

Sample Number: 378853
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0740
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		53	MG/L	08/02/05	410.3
Alkalinity, Total		134	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		14.70	MG/L	07/25/05	5310 C
Chloride		16.4	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

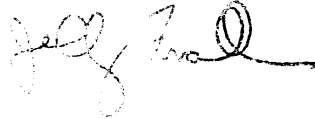
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-02/SW01;SAMPLE LOCATION CHOSEN AS MATRIX SPIKE;MATRIX SPIKE DUPLICATE

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 378854
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0740
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		54.5	MG/L	08/02/05	410.3
Alkalinity, Total		131	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.65	MG/L	07/22/05	353.2
Total Organic Carbon		14.70	MG/L	07/25/05	5310 C
Chloride		16.4	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-02/SW01MS; USE THESE BOTTLES FOR SITE SPECIFIC MSD

ANALYST'S COMMENTS:

ANALYST



*

Sample Number: 378855
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		53.5	MG/L	08/02/05	410.3
Alkalinity, Total		135	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		14.50	MG/L	07/25/05	5310 C
Chloride		16.5	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-02/SD01MSD; USE THESE BOTTLES FOR SITE SPECIFIC MSD

ANALYST'S COMMENTS:



ANALYST

*

Sample Number: 378856
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0810
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		73.8	MG/L	08/02/05	410.3
Alkalinity, Total		132	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.16	MG/L	07/22/05	353.2
Total Organic Carbon		15.40	MG/L	07/25/05	5310 C
Chloride		16.1	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

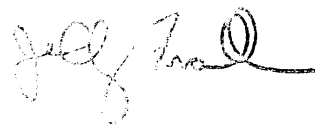
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-03/SW01

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 378857
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0837
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		107	MG/L	08/02/05	410.3
Alkalinity, Total		210	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.50	MG/L	07/22/05	353.2
Total Organic Carbon		25.50	MG/L	07/25/05	5310 C
Chloride		37.7	MG/L	08/08/05	325.2
Sulfate		20.3	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PD2-02/SW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378858
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0848
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		351	MG/L	08/02/05	410.3
Alkalinity, Total		240	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.07	MG/L	07/22/05	353.2
Total Organic Carbon		46.90	MG/L	07/25/05	5310 C
Chloride		28.9	MG/L	08/08/05	325.2
Sulfate		10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PD2-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378859
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0911
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		111	MG/L	08/02/05	410.3
Alkalinity, Total		178	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		16.20	MG/L	07/25/05	5310 C
Chloride		24.2	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PD3-01/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378860
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0911
Date Received: 07/21/2005
Date Completed: 09/27/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		104	MG/L	08/02/05	410.3
Alkalinity, Total		177	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		17.70	MG/L	07/25/05	5310 C
Chloride		24.3	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PD3-1000/SW01

ANALYST'S COMMENTS:



ANALYST

*

Sample Number: 378861
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0920
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		61.4	MG/L	08/02/05	410.3
Alkalinity, Total		147	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	07/22/05	353.2
Total Organic Carbon		10.90	MG/L	07/25/05	5310 C
Chloride		22.8	MG/L	08/08/05	325.2
Sulfate	<	10.0	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PD3-02/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378862
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1113
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		24.8	MG/L	08/02/05	410.3
Alkalinity, Total		241	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		2.05	MG/L	07/22/05	353.2
Total Organic Carbon		4.40	MG/L	07/25/05	5310 C
Chloride		17.7	MG/L	08/08/05	325.2
Sulfate		263.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
OFF-02/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378863
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		50.5	MG/L	08/02/05	410.3
Alkalinity, Total		246	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.85	MG/L	07/22/05	353.2
Total Organic Carbon		5.73	MG/L	07/25/05	5310 C
Chloride		17.7	MG/L	08/08/05	325.2
Sulfate		252.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
OFF-04/SW01;THIS SAMPLE LOCATION WAS CHOSEN FOR SITE SPECIFIC MS/MSD

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378864
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 08/04/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		60.5	MG/L	08/02/05	410.3
Alkalinity, Total		237	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		3.27	MG/L	07/22/05	353.2
Total Organic Carbon		5.78	MG/L	07/25/05	5310 C
Chloride		17.8	MG/L	08/08/05	325.2
Sulfate		254.	MG/L	08/08/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
OFF-04/SW01MS;USE THES BOTTLES FOR SITE SPECIFIC MATRIX SPIKE PARENT SAMPLE OFF-04-SW01

ANALYST`S COMMENTS:



*

ANALYST

Sample Number: 378865
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1119
Date Received: 07/21/2005
Date Completed: 09/27/2005
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 11/02/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		50	MG/L	08/02/05	410.3
Alkalinity, Total		244	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N		0.48	MG/L	07/22/05	353.2
Total Organic Carbon		5.16	MG/L	07/25/05	5310 C
Chloride		17.8	MG/L	08/08/05	325.2
Sulfate		260.	MG/L	08/08/05	375.4

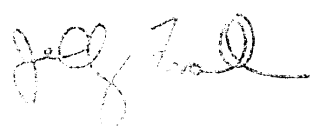
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
OFF-04/SW01MSD;USE THES BOTTLES FOR SITE SPECIFIC MATRIX SPIKE DUP PARENT SAMPLE
OFF-04-SW01

ANALYST`S COMMENTS:



*

ANALYST _____

Sample Number: 379557
Agency Number:
Date Collected: 07/21/2005
Time Collected: 0848
Date Received: 07/29/2005
Date Completed: 10/14/2005
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 12/08/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		165	MG/L	08/19/05	410.3
Alkalinity, Total		245	MG/L	08/01/05	310.2
Nitrogen, Nitrate as N	C	5.81	MG/L	07/29/05	353.2
Total Organic Carbon		46.90	MG/L	10/03/05	5310 C
Chloride		13.2	MG/L	08/29/05	325.2
Sulfate		19.7	MG/L	08/29/05	375.4

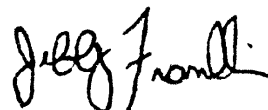
SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
OFF-09/SW01

ANALYST'S COMMENTS:
CORRECTED FINAL REPORT



Jeffrey Franklin
State Environmental Laboratory

*

ANALYST _____

Sample Number: 383122
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0838
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Total Organic Carbon		3.50	MG/L	10/03/05	5310 C

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

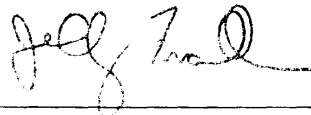
LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-03/GW01; 500ML FOR ICP; ONLY TOC FOR GEN CHEM

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383123
Agency Number:
Date Collected: 09/13/2005
Time Collected: 0908
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Total Organic Carbon		3.04	MG/L	10/03/05	5310 C

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-04/GW01; 500ML FOR ICP; ONLY TOC FOR GEN CHEM

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 383126
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1018
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		93.1	MG/L	09/29/05	410.3
Alkalinity, Total		367	MG/L	09/21/05	310.2
Nitrogen, Nitrate as N		0.18	MG/L	09/21/05	353.2
Total Organic Carbon		4.34	MG/L	10/03/05	5310 C
Chloride	<	10.0	MG/L	10/11/05	325.2
Sulfate		944.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-07/GW01

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 383127
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1112
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Total Organic Carbon		5.33	MG/L	10/03/05	5310 C

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-08/GW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 383128
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1137
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)	<	5	MG/L	09/29/05	410.3
Alkalinity, Total		184	MG/L	09/21/05	310.2
Nitrogen, Nitrate as N		0.11	MG/L	09/21/05	353.2
Total Organic Carbon		1.23	MG/L	10/03/05	5310 C
Chloride		10.7	MG/L	10/11/05	325.2
Sulfate		367.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-09/GW01; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 383129
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1450
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		23.4	MG/L	09/29/05	410.3
Alkalinity, Total		99.6	MG/L	09/21/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	09/21/05	353.2
Total Organic Carbon		5.96	MG/L	10/03/05	5310 C
Chloride		10.0	MG/L	10/11/05	325.2
Sulfate		17.7	MG/L	10/10/05	375.4

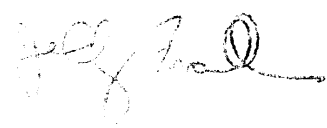
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
BG-OFF-02/SW01

ANALYST'S COMMENTS:



*

ANALYST _____

Sample Number: 383130
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1137
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)	<	5	MG/L	09/29/05	410.3
Alkalinity, Total		183	MG/L	09/21/05	310.2
Nitrogen, Nitrate as N		0.12	MG/L	09/21/05	353.2
Total Organic Carbon		1.20	MG/L	10/03/05	5310 C
Chloride		10.6	MG/L	10/11/05	325.2
Sulfate		363.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PZ-1001/GW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 383131
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1640
Date Received: 09/14/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		61.4	MG/L	09/29/05	410.3
Alkalinity, Total		147	MG/L	09/21/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	09/21/05	353.2
Total Organic Carbon		42.30	MG/L	10/03/05	5310 C
Chloride		22.3	MG/L	10/11/05	325.2
Sulfate		22.7	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
PDI-02A/SW01; USE FOR MS/MSD

ANALYST'S COMMENTS:



*

ANALYST _____

Sample Number: 384387
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1028
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		47.6	MG/L	10/10/05	410.3
Alkalinity, Total		122	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	10/07/05	353.2
Total Organic Carbon		14.40	MG/L	10/11/05	5310 C
Chloride		23.1	MG/L	10/11/05	325.2
Sulfate		15.9	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
BG-OFF-01/SW01

ANALYST'S COMMENTS:



ANALYST _____

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Sample Number: 384388
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1028
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		51.1	MG/L	10/10/05	410.3
Alkalinity, Total		122	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	10/07/05	353.2
Total Organic Carbon		14.40	MG/L	10/11/05	5310 C
Chloride		22.9	MG/L	10/11/05	325.2
Sulfate		19.5	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
BG-OFF-1000/SW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 384389
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1135
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		15.2	MG/L	10/10/05	410.3
Alkalinity, Total		280	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N		0.30	MG/L	10/07/05	353.2
Total Organic Carbon		2.00	MG/L	10/11/05	5310 C
Chloride		25.0	MG/L	10/11/05	325.2
Sulfate		90.9	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
MW-01/GW01

ANALYST'S COMMENTS:



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ANALYST _____

Sample Number: 384391
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1629
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		20.6	MG/L	10/10/05	410.3
Alkalinity, Total		343	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N		0.43	MG/L	10/07/05	353.2
Total Organic Carbon		1.76	MG/L	10/11/05	5310 C
Chloride		65.4	MG/L	10/11/05	325.2
Sulfate		388.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
MW-03/GW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 384392
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1411
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		16.2	MG/L	10/10/05	410.3
Alkalinity, Total		168	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N		0.08	MG/L	10/07/05	353.2
Total Organic Carbon		1.46	MG/L	10/11/05	5310 C
Chloride		11.0	MG/L	10/11/05	325.2
Sulfate		431.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
MW-04/GW01; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 384395
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1629
Date Received: 09/30/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		15.2	MG/L	10/10/05	410.3
Alkalinity, Total		306	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N		0.41	MG/L	10/07/05	353.2
Total Organic Carbon		1.55	MG/L	10/11/05	5310 C
Chloride		60.0	MG/L	10/11/05	325.2
Sulfate		386.	MG/L	10/10/05	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
MW-1000/GW01

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 384442
Agency Number:
Date Collected: 10/03/2005
Time Collected: 1443
Date Received: 10/04/2005
Date Completed: 11/03/2005
PWS Id:
Location Code: W-8
Station:
Facility:
Collected By: DSB
Report Date: 11/03/2005

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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CONCENTRATION IN SAMPLE				Page 1 of 1	
PARAMETER NAME	CM	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		20.6	MG/L	10/10/05	410.3
Alkalinity, Total		358	MG/L	10/10/05	310.2
Nitrogen, Nitrate as N	<	0.05	MG/L	10/07/05	353.2
Total Organic Carbon		1.73	MG/L	10/11/05	5310 C
Chloride		10.7	MG/L	10/11/05	325.2
Sulfate		40.7	MG/L	10/10/05	375.4

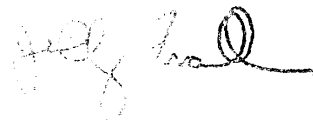
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

LAB REFERENCES: GENERAL CHEMISTRY;

SAMPLERS COMMENTS:
RW-01/GW01

ANALYST'S COMMENTS:



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ANALYST _____

QC Results

RI PI

Water Sx

Metal

Gen Chemistry

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **378853**

Units:			mg/L		Blank		Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)		Conc.	Result	%Rec	Limits		%Rec	%Rec	RPD		(MS)	%Rec	Limits	(D)	Dup RPD	Dup Limits	
COD	410.3	5	<	5	50	51	101.9	85-115%		104.6	103.1	1.4	53.0	74.0	84.0	80-120%	69.4	26.8	10%	
T. Alkalinity	310.2	10	<	10	100	98.8	98.8	90-110%		99.5	99	0.5	134	224	90.0	80-120%	135	0.7	10%	
NO3-Nitrogen	353.2	0.05	<	0.05	0.4	0.4	100	90-110%		95	95	0	<0.05	0.40	100.0	80-120%	<0.05	0.0	10%	
Chloride	325.2	10	<	10	50	50.42	101	90-110%		107	107	0	16.44	72.2	108.7	80-120%	16.66	1.3	10%	
Sulfate	375.4	10	<	10	30	37.36	91	90-110%		103	96	7.0	<10	34.5	89.0	80-120%	<10	0	10%	
Total Organic Carbon	5310C	0.5	<	0.5	4	3.78	94.5	90-110%		1.56	1.65	5.6	14.65	18.6	97.8	80-120%	14.48	1.1	10%	

Units:			ug/L		Blank		Cal. Blank		LFB		IPC/LCS			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes		Method	PQL	(LRB)	(S1)	%Rec	Limits	%Rec	%Rec	RPD	MS	MSD	RPA		Limits	RPD	Limits			
Arsenic		200.7	10	<	10	<	10	103.5	85-115%		100.4	99.5	0.9	<10	211	213	102.3	70-130%	0.7	25%
Cadmium		200.7	5	<	5	<	1	102.3	85-115%		97.1	98.7	1.6	<5	208	210	102.3	70-130%	1.1	25%
Lead		200.7	10	<	10	<	10	102.9	85-115%		101.1	101.1	0.0	<10	218	218	105.6	70-130%	0.2	25%
Zinc		200.7	5	<	5	<	12	100.6	85-115%		101.4	105	3.5	33	244	248	105.7	70-130%	1.5	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	25	8/2/2005	378845-378865
200	100	8/1/2005	378845-378865, 379557
0.2	0.4	7/22/2005	378845-378865
150	50	8/8/2005	378845-378865
150	30	8/8/2005	378845-378865
2.0	4.0	7/25/2005	378845-378865
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866

STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **378863**

Units: mg/L			Blank	Fortified Blank (LFB)				LCS			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)	Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	< 5	50	51	101.9	85-115%	104.6	103.1	1.4	50.5	76.40	103.6	80-120%	52.0	2.93	10%
T. Alkalinity	310.2	10	< 10	100	98.8	98.8	90-110%	99	100	1.0	246	334	88.0	80-120%	245	0.4	10%
NO3-Nitrogen	353.2	0.05	< 0.05	0.4	0.4	100	90-110%	95	95	0	0.85	1.24	97.5	80-120%	0.85	0.0	10%
Chloride	325.2	10	< 10	50	50.42	101	90-110%	101	101	0	17.7	72.97	107.8	80-120%	17.7	0	10%
Sulfate	375.4	10	< 10	30	37.36	91	90-110%	100	93	7.3	252	276	97.9	80-120%	253	0.2	10%
Total Organic Carbon	5310C	0.5	< 0.5	4	3.78	94.5	90-110%	1.56	1.65	5.6	5.73	9.73	100.0	80-120%	5.72	0.3	10%

Units: ug/L			Blank	Cal. Blank	LFB		IPC/LCS			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)	(S1)	LFB %Rec	Limits	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	< 10	< 10	103.5	85-115%	99.5	98.2	1.3	<10	211	209	101.5	70-130%	0.8	25%
Cadmium	200.7	5	< 5	< 1	102.3	85-115%	98.7	95.5	3.3	<5	201	200	98.0	70-130%	0.9	25%
Lead	200.7	10	< 10	< 10	102.9	85-115%	101.1	99.5	1.6	15	226	224	103.4	70-130%	0.9	25%
Zinc	200.7	5	< 29	< 12	100.6	85-115%	105	99.8	5.1	290	487	473	94.6	70-130%	2.9	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	25	8/2/2005	378845-378865
200	100	8/1/2005	378845-378865, 379557
0.2	0.4	7/22/2005	378845-378865
250	50	8/8/2005	378845-378865
250	30	8/8/2005	378845-378865
2.0	4.0	7/25/2005	378845-378865
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866
1000	200	7/27/2005	378844-378866

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **379557**

Units: mg/L			Blank		Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)		Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	<	5	50	50.2	100.5	85-115%	101.8	100.3	1.5	165	NP	NP	80-120%	146.4	12.1	10%
NO3-Nitrogen	353.2	0.05	<	0.05	4.0	4.03	101	90-110%	95.5	95.0	0.5	7.27	NP	NP	80-120%	NP	NP	10%
Chloride	325.2	10	<	10	50	48.7	97	90-110%	108	102	5.7	13.2	NP	NP	80-120%	12.8	0.8	10%
Sulfate	375.4	10	<	10	30	29.4	98	90-110%	99	97	2.0	19.7	NP	NP	80-120%	19.0	3.7	10%
Total Organic Carbon	5310C	0.5	<	0.5	4.0	4.12	101.5	90-110%	107.5	113.5	5.4	46.9	NP	NP	80-120%	NP	NP	10%

Units: ug/L			Blank		Cal. Blank		LFB		IPC/LCS Dup			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)		(S1)		%Rec	Limits	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	<	10	<	10	99.0	85-115%	101.4	98.4	3.0	149	NP	NP	NP	70-130%	NP	25%
Cadmium	200.7	5	<	5	<	1	101.0	85-115%	103	98.3	4.7	810	NP	NP	NP	70-130%	NP	25%
Lead	200.7	10	<	10	<	10	99.8	85-115%	102.9	100.6	2.3	2560	NP	NP	NP	70-130%	NP	25%
Zinc	200.7	5	<	5	<	12	101.2	85-115%	107	100.6	6.2	61300	NP	NP	NP	70-130%	NP	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report. COD analyzed at 1:4 dilution. Sample diluted 1:4 for elevated zinc.

No project QC was requested, thus project specific matrix QC is not provided (NP) unless performed.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	NP	8/19/2005	379557
			Analyzed previously
2.0	NP	7/29/2005	379557
150	NP	8/29/2005	379557
150	NP	8/29/2005	379557
2.0	NP	10/3/2005	379557
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442

STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **383128**

Units: mg/L			Blank		Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)		Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	<	5	50	46.9	93.8	85-115%	95.5	93.1	2.5	<5.0	NP	NP	80-120%	NP	NP	10%
T. Alkalinity	310.2	10	<	10	100	97.7	97.7	90-110%	99.5	101.5	2.0	184	271.0	87.0	80-120%	184	0	10%
NO ₃ -Nitrogen	353.2	0.05	<	0.05	0.4	0.38	95	90-110%	100	90	10.5	0.11	0.49	96.0	80-120%	0.11	0.0	10%
Chloride	325.2	10	<	10	50	50.8	102	90-110%	101.3	100.7	0.6	10.7	63.6	104.8	80-120%	10.7	0	10%
Sulfate	375.4	10	<	10	30	28.3	94.3	90-110%	106	105	0.9	367	NC	NC	80-120%	357	2.8	10%
Total Organic Carbon	5310C	0.5	<	0.5	4.0	4.12	101.5	90-110%	107.5	113.5	5.4	1.23	5.25	100.5	80-120%	1.19	3.3	10%

Units: ug/L			Blank		Cal. Blank		LFB		IPC/LCS Dup			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)		(S1)		%Rec	Limits	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	<	10	<	10	99.0	85-115%	98.4	99.4	1.0	12	207	207	96.2	70-130%	0.0	25%
Cadmium	200.7	5	<	5	<	1	101.0	85-115%	98.3	97.1	1.2	178	372	361	92.3	70-130%	3.0	25%
Lead	200.7	10	<	10	<	10	99.8	85-115%	100.6	98.8	1.8	371	560	556	92.7	70-130%	0.8	25%
Zinc	200.7	5	<	5	<	12	101.2	85-115%	100.6	99.8	0.8	8920	9189	8936	69.0	70-130%	2.8	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report. The spiked sulfate matrix exceeded instrument calibration and was thus not calculated (NC). The COD matrix spike and duplicate were not performed on this sample. A COD MS/MSD in the same analytical batch was conducted on sample #383131.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	25	9/29/2005	383126-383131
200	100	9/21/2005	383126-383131
0.2	0.4	9/21/2005	383126-383131
150	50	10/11/2005	383126-384442
150	30	10/10/2005	383126-384442
2.0	4	10/3/2005	379557, 383122-383131
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **383131**

Units: mg/L			Blank	Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)	Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	< 5	50	46.9	93.8	85-115%	95.5	93.1	2.5	61.4	86.1	98.8	80-120%	60.9	0.82	10%
T. Alkalinity	310.2	10	< 10	100	97.7	97.7	90-110%	99.5	101.5	2.0	147	240.0	93.0	80-120%	146	0.7	10%
NO3-Nitrogen	353.2	0.05	< 0.05	0.4	0.38	95	90-110%	90	95	5.4	<0.05	0.39	97.5	80-120%	<0.05	0.0	10%
Chloride	325.2	10	< 10	50	50.8	102	90-110%	102	97	5.0	22.3	76.5	105.8	80-120%	21.9	1.8	10%
Sulfate	375.4	10	< 10	30	28.3	94.3	90-110%	97	98	1.0	32.2	66.2	106.5	80-120%	32.0	0.7	10%
Total Organic Carbon	5310C	0.5	< 0.5	4.0	4.12	101.5	90-110%	107.5	113.5	5.4	42.3	12.4	98.9	80-120%	43.2	2.1	10%

Units: ug/L			Blank	Cal. Blank	LFB		IPC/LCS Dup			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)	(S1)	%Rec	Limits	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	< 10	< 10	99.0	85-115%	99.4	98.3	1.1	<10	205	200	101.1	70-130%	3.3	25%
Cadmium	200.7	5	< 5	< 1	101.0	85-115%	97.1	97.3	0.2	37	235	223	94.0	70-130%	5.3	25%
Lead	200.7	10	< 10	< 10	99.8	85-115%	98.8	97.8	1.0	56.0	248	241	95.2	70-130%	3.2	25%
Zinc	200.7	5	< 5	< 12	101.2	85-115%	99.8	100.1	0.3	1250	1450	1365	76.7	70-130%	6.0	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report. The TOC results were derived from a 1:5 dilution. The TOC matrix spike was calculated on diluted sample aliquot.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	25	9/29/2005	383126-383131
200	100	9/21/2005	383126-383131
0.2	0.4	9/21/2005	383126-383131
250	50	10/11/2005	383126-384442
250	30	10/10/2005	383126-384442
2.0	4	10/3/2005	379557, 383122-383131
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442

STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
GENERAL CHEMISTRY and METALS-LIQUIDS

Date: 12/7/2005
 Project: Tulsa Fuel
 Project Code: TF-LIQ

Sample: **384392**

Units: mg/L			Blank		Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)		Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	<	5	50	56.1	112.2	85-115%	103.1	100.6	2.5	16.2	34.0	84.8	80-120%	15.2	6.4	10%
T. Alkalinity	310.2	10	<	10	100	99.4	99.4	90-110%	100	99.5	0.5	168	252.0	84.0	80-120%	168	0	10%
NO3-Nitrogen	353.2	0.05	<	0.05	0.4	0.37	92.5	90-110%	95	95	0	0.08	0.4	87.5	80-120%	0.08	0.0	10%
Chloride	325.2	10	<	10	50	50.8	102	90-110%	101	103	2.0	11.0	NP	NP	80-120%	NP	NP	10%
Sulfate	375.4	10	<	10	30	28.3	94.3	90-110%	106	105	0.9	431	NP	NP	80-120%	NP	NP	10%
Total Organic Carbon	5310C	0.5	<	0.5	4	4.31	105.8	90-110%	104	113.2	8.5	1.46	5.5	101.8	80-120%	1.36	7.1	10%

Units: ug/L			Blank		Cal. Blank		LFB		IPC/LCS Dup			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)		(S1)		%Rec	Limits	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	<	10	<	10	99.0	85-115%	99.4	98.3	1.1	<10	193	195	97.2	70-130%	0.9	25%
Cadmium	200.7	5	<	5	<	1	101.0	85-115%	97.1	97.3	0.2	105.0	294	299	94	70-130%	1.8	25%
Lead	200.7	10	<	10	<	10	99.8	85-115%	98.8	97.8	1.0	13.0	197	204	94.4	70-130%	3.5	25%
Zinc	200.7	5	<	5	<	12	101.2	85-115%	99.8	100.1	0.3	4900	5279	5339	200.2	70-130%	1.1	25%

COMMENTS:

The run dates and batch sizes differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
100	25	10/10/2005	384387-384442
200	100	10/10/2005	384387-384442
0.2	0.4	10/7/2005	384387-384442
150	50	10/11/2005	383126-384442
150	30	10/10/2005	383126-384442
2.0	4.0	10/11/2005	384387-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442
1000	200	10/18/2005	379557-384442

Oklahoma SEL

Analytical Data

RI Phase I

Soil / Sediment Data

Samples for XRF, ICP, and TCLP Metals Analysis

**Note: QC information for XRF is presented with samples that
were only analyzed using XRF.**

Sample Number: 378870
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1055
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		22.0	MG/KG	10/31/05	6200
Lead, XRF		321	MG/KG	10/31/05	6200
Zinc, XRF		3460	MG/KG	10/31/05	6200
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF		22.0	MG/KG	10/31/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)		74.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL AND MANUF
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-03/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Labs Analyzing this Sample: Metals

Sample Number: 378871
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1055
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		22.0	MG/KG	10/31/05	6200
Lead, XRF		318	MG/KG	10/31/05	6200
Zinc, XRF		2480	MG/KG	10/31/05	6200
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF		22.0	MG/KG	10/31/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)		78.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-1000/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



*

ANALYST _____

Sample Number: 378872
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1055
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		32.0	MG/KG	12/28/05	6010
Cadmium , Sediment		28.0	MG/KG	12/28/05	6010
Lead, Sediment		334	MG/KG	12/28/05	6010
Zinc, Sediment		2450	MG/KG	12/28/05	6010
% Solids		16.0	%	08/04/05	CLP 05.3

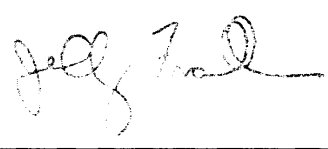
SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-03/SD01CF;USE SAMPLE FOR ICP CONFIRMATION OF LAB XRF PARENT SAMPLE SMP-03/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:



ANALYST _____

*

Sample Number: 378873
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1055
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		27.0	MG/KG	12/28/05	6010
Cadmium , Sediment		27.0	MG/KG	12/28/05	6010
Lead, Sediment		321	MG/KG	12/28/05	6010
Zinc, Sediment		2400	MG/KG	12/28/05	6010
% Solids		15.5	%	08/04/05	CLP 05.3

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-1000/SD01CF;USE SAMPLE FOR ICP CONFIRMATION OF LAB XRF PARENT SAMPLE SMP-1000/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

ANALYST _____

Sample Number: 378882
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	10/31/05	6200
Lead, XRF		2270	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Lead (TCLP)		116	UG/L	11/07/05	6010
Arsenic, XRF		168	MG/KG	10/31/05	6200
Cadmium (TCLP)		16.0	UG/L	11/07/05	6010
Arsenic (TCLP)		71.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-02/SD01;SAMPLE LOCATION CHOSEN FOR SITE SPECIFIC MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 378883
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	10/31/05	6200
Lead, XRF		2400	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Lead (TCLP)		282	UG/L	11/07/05	6010
Arsenic, XRF		187	MG/KG	10/31/05	6200
Cadmium (TCLP)		36.0	UG/L	11/07/05	6010
Arsenic (TCLP)		66.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-02/SD01MS;USE THESE BOTTLES FOR SITE SPECIFIC MS

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Sample Number: 378884
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	11/01/05	6200
Lead, XRF		2740	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Lead (TCLP)		131	UG/L	11/07/05	6010
Arsenic, XRF		195	MG/KG	11/01/05	6200
Cadmium (TCLP)		14.0	UG/L	11/07/05	6010
Arsenic (TCLP)		94.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-02/SD01MSD;USE THESE BOTTLES FOR SITE SPECIFIC MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378885
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		63.0	MG/KG	10/06/05	6010
Cadmium , Sediment		1400	MG/KG	10/06/05	6010
Lead, Sediment		1020	MG/KG	10/06/05	6010
Zinc, Sediment		44700	MG/KG	10/06/05	6010
% Solids		8.45	%	08/04/05	CLP 05.3

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PDI-02/SD01CF; SAMPLE LOCATION CHOSEN FOR SITE SPECIFIC MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 378886
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	X		MG/KG		6010
Cadmium , Sediment	X		MG/KG		6010
Lead, Sediment	X		MG/KG		6010
Zinc, Sediment	X		MG/KG		6010
% Solids		9.73	%	08/04/05	CLP 05.3

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PDI-02/SD01MSCF; SAMPLE LOCATION CHOSEN FOR SITE SPECIFIC MS

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:
X = SEE MS/MSD QC DELIVERABLE FOR 378885

*

ANALYST 

Sample Number: 378887
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	X		MG/KG		6010
Cadmium , Sediment	X		MG/KG		6010
Lead, Sediment	X		MG/KG		6010
Zinc, Sediment	X		MG/KG		6010
% Solids		10.2	%	08/04/05	CLP 05.3

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PDI-02/SD01MSCF; USE THESE BOTTLES FOR SITE SPECIFIC MS

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:
X = SEE MS/MSD QC DELIVERABLE FOR 378885

*

ANALYST 

Sample Number: 379559
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1555
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		156	MG/KG	11/01/05	6200
Lead, XRF		2220	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Lead (TCLP)		499	UG/L	11/07/05	6010
Arsenic, XRF		161	MG/KG	11/01/05	6200
Cadmium (TCLP)		1530	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

OFF-10/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379560
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1555
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		95.0	MG/KG	10/06/05	6010
Cadmium , Sediment		145	MG/KG	10/06/05	6010
Lead, Sediment		1690	MG/KG	10/06/05	6010
Zinc, Sediment		15100	MG/KG	10/06/05	6010
% Solids		67.9	%	08/04/05	CLP 05.3

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-10/SD01CF

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 379566
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0923
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		615	MG/KG	10/06/05	6010
Cadmium, XRF		315	MG/KG	11/01/05	6200
Cadmium , Sediment		242	MG/KG	10/06/05	6010
Lead, XRF	>	5500	MG/KG	11/01/05	6200
Lead, Sediment		16800	MG/KG	10/06/05	6010
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Zinc, Sediment		57000	MG/KG	10/06/05	6010
Lead (TCLP)		72600	UG/L	11/09/05	6010
% Solids		84.1	%	08/04/05	CLP 05.3
Arsenic, XRF	>	650	MG/KG	11/01/05	6200
Cadmium (TCLP)		2870	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-01/SS02; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 379575
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1003
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		475	MG/KG	10/06/05	6010
Cadmium, XRF		401	MG/KG	11/02/05	6200
Cadmium, Sediment		405	MG/KG	10/06/05	6010
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Lead, Sediment		13300	MG/KG	10/06/05	6010
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Zinc, Sediment		119000	MG/KG	10/06/05	6010
Lead (TCLP)		48700	UG/L	11/09/05	6010
% Solids		91.3	%	08/04/05	CLP 05.3
Arsenic, XRF	>	650	MG/KG	11/02/05	6200
Cadmium (TCLP)		6030	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-05/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379593
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1227
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		502	MG/KG	10/26/05	6010
Cadmium, XRF		636	MG/KG	11/02/05	6200
Cadmium, Sediment		691	MG/KG	10/26/05	6010
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Lead, Sediment		13500	MG/KG	10/26/05	6010
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Zinc, Sediment		84400	MG/KG	10/26/05	6010
Lead (TCLP)		4870	UG/L	11/07/05	6010
% Solids		87.3	%	08/04/05	CLP 05.3
Arsenic, XRF	>	650	MG/KG	11/02/05	6200
Cadmium (TCLP)		3630	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-09/SS02; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 379594
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1227
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		555	MG/KG	10/26/05	6010
Cadmium, XRF		653	MG/KG	11/02/05	6200
Cadmium, Sediment		674	MG/KG	10/26/05	6010
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Lead, Sediment		14900	MG/KG	10/26/05	6010
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Zinc, Sediment		93300	MG/KG	10/26/05	6010
Lead (TCLP)		4980	UG/L	11/07/05	6010
% Solids		87.4	%	08/04/05	CLP 05.3
Arsenic, XRF	>	650	MG/KG	11/02/05	6200
Cadmium (TCLP)		3950	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-1002/SS02; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 379600
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1531
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	10/26/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Cadmium , Sediment	<	1.00	MG/KG	10/26/05	6010
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Lead, Sediment		20.0	MG/KG	10/26/05	6010
Zinc, XRF		85.0	MG/KG	11/02/05	6200
Zinc, Sediment		74.0	MG/KG	10/26/05	6010
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
% Solids		80.5	%	08/04/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-13/SS03; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380105
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1450
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	10/26/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Cadmium, Sediment		3.00	MG/KG	10/26/05	6010
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Lead, Sediment		18.0	MG/KG	10/26/05	6010
Zinc, XRF		593	MG/KG	11/04/05	6200
Zinc, Sediment		461	MG/KG	10/26/05	6010
Lead (TCPL)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200
Cadmium (TCPL)		44.0	UG/L	12/05/05	6010
Arsenic (TCPL)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-49/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380112
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1303
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium , Sediment	<	1.00	MG/KG	11/15/05	6010
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Lead, Sediment		12.0	MG/KG	11/15/05	6010
Zinc, XRF		66.0	MG/KG	11/03/05	6200
Zinc, Sediment		49.0	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-10/SS03; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380114
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1005
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		11.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium , Sediment		3.00	MG/KG	11/15/05	6010
Lead, XRF		81.0	MG/KG	11/03/05	6200
Lead, Sediment		72.0	MG/KG	11/15/05	6010
Zinc, XRF		815	MG/KG	11/03/05	6200
Zinc, Sediment		696	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium (TCLP)		27.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-01/SS01; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380115
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1005
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium , Sediment		3.00	MG/KG	11/15/05	6010
Lead, XRF		94.0	MG/KG	11/03/05	6200
Lead, Sediment		83.0	MG/KG	11/15/05	6010
Zinc, XRF		851	MG/KG	11/03/05	6200
Zinc, Sediment		702	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200
Cadmium (TCLP)		23.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1000/SS01; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380134
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0922
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		367	MG/KG	11/15/05	6010
Cadmium, XRF		441	MG/KG	11/04/05	6200
Cadmium , Sediment		594	MG/KG	11/15/05	6010
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Lead, Sediment		25200	MG/KG	11/15/05	6010
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Zinc, Sediment		104000	MG/KG	11/15/05	6010
Lead (TCLP)		47200	UG/L	12/07/05	6010
Arsenic, XRF	>	650	MG/KG	11/04/05	6200
Cadmium (TCLP)		3480	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-19/SS02; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380140
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0850
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		12.0	MG/KG	11/15/05	6010
Cadmium, XRF		25.0	MG/KG	11/07/05	6200
Cadmium , Sediment		23.0	MG/KG	11/15/05	6010
Lead, XRF		357	MG/KG	11/07/05	6200
Lead, Sediment		284	MG/KG	11/15/05	6010
Zinc, XRF		2500	MG/KG	11/07/05	6200
Zinc, Sediment		1840	MG/KG	11/15/05	6010
Lead (TCLP)		213	UG/L	12/05/05	6010
Arsenic, XRF		20.0	MG/KG	11/07/05	6200
Cadmium (TCLP)		129	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-05/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380149
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0930
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	11/15/05	6010
Cadmium, XRF		15.0	MG/KG	11/07/05	6200
Cadmium, Sediment		12.0	MG/KG	11/15/05	6010
Lead, XRF		94.0	MG/KG	11/07/05	6200
Lead, Sediment		81.0	MG/KG	11/15/05	6010
Zinc, XRF		1550	MG/KG	11/07/05	6200
Zinc, Sediment		1210	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200
Cadmium (TCLP)		160	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-22/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380163
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1100
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Cadmium, Sediment	<	1.00	MG/KG	11/15/05	6010
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Lead, Sediment		17.0	MG/KG	11/15/05	6010
Zinc, XRF		112	MG/KG	11/07/05	6200
Zinc, Sediment		83.0	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200
Cadmium (TCLP)		25.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-25/SS02; CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380165
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1100
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Cadmium , Sediment		1.00	MG/KG	11/15/05	6010
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Lead, Sediment		11.0	MG/KG	11/15/05	6010
Zinc, XRF		318	MG/KG	11/07/05	6200
Zinc, Sediment		239	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200
Cadmium (TCLP)		13.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

Sample Number: 380165
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1100
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1006/SS02; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Labs Analyzing this Sample: Gen. Chen Metals

Sample Number: 380170
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1155
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		45.0	MG/KG	11/15/05	6010
Cadmium, XRF		99.0	MG/KG	11/07/05	6200
Cadmium , Sediment		65.0	MG/KG	11/15/05	6010
Lead, XRF		1360	MG/KG	11/07/05	6200
Lead, Sediment		1170	MG/KG	11/15/05	6010
Zinc, XRF	>	7000	MG/KG	11/07/05	6200
Zinc, Sediment		11400	MG/KG	11/15/05	6010
Lead (TCLP)		18500	UG/L	12/07/05	6010
Arsenic, XRF		86.0	MG/KG	11/07/05	6200
Cadmium (TCLP)		1640	UG/L	12/05/05	6010
Arsenic (TCLP)		58.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-39/SS02; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380182
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1415
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		10.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Cadmium, Sediment	<	1.00	MG/KG	11/15/05	6010
Lead, XRF	<	20.0	MG/KG	11/08/05	6200
Lead, Sediment		25.0	MG/KG	11/15/05	6010
Zinc, XRF		59.0	MG/KG	11/08/05	6200
Zinc, Sediment		51.0	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-18/SS03; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 380190
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1510
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY

OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<		MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Cadmium , Sediment		3.00	MG/KG	11/15/05	6010
Lead, XRF		21.0	MG/KG	11/09/05	6200
Lead, Sediment		26.0	MG/KG	11/15/05	6010
Zinc, XRF		653	MG/KG	11/09/05	6200
Zinc, Sediment		473	MG/KG	11/15/05	6010
Lead (TCLP)		481	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200
Cadmium (TCLP)		393	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-29/SS01; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380195
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1220
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		12.0	MG/KG	11/15/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Cadmium , Sediment	<	1.00	MG/KG	11/15/05	6010
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Lead, Sediment		23.0	MG/KG	11/15/05	6010
Zinc, XRF		109	MG/KG	11/09/05	6200
Zinc, Sediment		86.0	MG/KG	11/15/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200
Cadmium (TCLP)		11.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-32/SS02; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380218
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1050
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		33.0	MG/KG	12/08/05	6010
Cadmium, XRF		60.0	MG/KG	11/15/05	6200
Cadmium, Sediment		40.0	MG/KG	12/08/05	6010
Lead, XRF		1510	MG/KG	11/15/05	6200
Lead, Sediment		1140	MG/KG	12/08/05	6010
Zinc, XRF	>	7000	MG/KG	11/15/05	6200
Zinc, Sediment		8920	MG/KG	12/08/05	6010
Lead (TCLP)		3930	UG/L	12/05/05	6010
Arsenic, XRF		87.0	MG/KG	11/15/05	6200
Cadmium (TCLP)		1690	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-36/SS01; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380232
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1425
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		12.0	MG/KG	12/08/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Cadmium , Sediment	<	1.00	MG/KG	12/08/05	6010
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Lead, Sediment		19.0	MG/KG	12/08/05	6010
Zinc, XRF		78.0	MG/KG	11/17/05	6200
Zinc, Sediment		73.0	MG/KG	12/08/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-42/SS03; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380240
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1518
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		25.0	MG/KG	12/08/05	6010
Cadmium, XRF		31.0	MG/KG	11/18/05	6200
Cadmium , Sediment		29.0	MG/KG	12/08/05	6010
Lead, XRF		1110	MG/KG	11/18/05	6200
Lead, Sediment		934	MG/KG	12/08/05	6010
Zinc, XRF		2550	MG/KG	11/18/05	6200
Zinc, Sediment		2080	MG/KG	12/08/05	6010
Lead (TCLP)		1020	UG/L	12/05/05	6010
Arsenic, XRF		64.0	MG/KG	11/18/05	6200
Cadmium (TCLP)		295	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

Sample Number: 380240
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1518
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-46/SS01; USE SAMPLE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Labs Analyzing this Sample: Gen. Chem Metals



Sample Number: 380264
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1654
Date Received: 08/05/2005
Date Completed: 01/09/2006
Collected By: BDS
PWS Id:
Location Code: W3
Station:
Facility:
Report Date: 12/15/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Confirmation 10/01/2013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		32	MG/KG	11/18/05	6200
Cadmium (TCLP)		809	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50	UG/L	12/05/05	6010
Arsenic, Sediment		10	MG/KG	12/08/05	6010
Cadmium, XRF		78	MG/KG	11/18/05	6200
Cadmium , Sediment		54	MG/KG	12/08/05	6010
Lead, XRF		596	MG/KG	11/18/05	6200
Lead, Sediment		446	MG/KG	12/08/05	6010
Cinc, XRF		1810	MG/KG	11/18/05	6200
Zinc, Sediment		1360	MG/KG	12/08/05	6010
Lead (TCLP)		298	UG/L	12/05/05	6010

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SP-53/SS01; USE FOR CONFIRMATION

ANALYST`S COMMENTS:

(CF) Corrected final report.

* ANALYST

Sample Number: 380265
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1654
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		16.0	MG/KG	12/08/05	6010
Cadmium, XRF		89.0	MG/KG	11/18/05	6200
Cadmium , Sediment		65.0	MG/KG	12/08/05	6010
Lead, XRF		789	MG/KG	11/18/05	6200
Lead, Sediment		568	MG/KG	12/08/05	6010
Zinc, XRF		2290	MG/KG	11/18/05	6200
Zinc, Sediment		1810	MG/KG	12/08/05	6010
Lead (TCLP)		221	UG/L	12/05/05	6010
Arsenic, XRF		44.0	MG/KG	11/18/05	6200
Cadmium (TCLP)		719	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1014/ SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381331
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1105
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		18.0	MG/KG	12/09/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium , Sediment	<	1.00	MG/KG	12/09/05	6010
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Lead, Sediment		40.0	MG/KG	12/09/05	6010
Zinc, XRF		84.0	MG/KG	11/23/05	6200
Zinc, Sediment		72.0	MG/KG	12/09/05	6010
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS04; USE FOR MS/MSD & CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381335
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1222
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		18.0	MG/KG	12/08/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium , Sediment	<	1.00	MG/KG	12/08/05	6010
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Lead, Sediment		15.0	MG/KG	12/08/05	6010
Zinc, XRF		402	MG/KG	11/23/05	6200
Zinc, Sediment		343	MG/KG	12/08/05	6010
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium (TCLP)		12.0	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-07/SS03; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381344
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1440
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		16.0	MG/KG	12/08/05	6010
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium, Sediment	<	1.00	MG/KG	12/08/05	6010
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Lead, Sediment		14.0	MG/KG	12/08/05	6010
Zinc, XRF		64.0	MG/KG	11/23/05	6200
Zinc, Sediment		41.0	MG/KG	12/08/05	6010
Lead (TCLP)	<	50.0	UG/L	11/07/05	6010
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200
Cadmium (TCLP)	<	5.00	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-01/SS02; USE FOR CONFIRMATION & MS-/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382567
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1407
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		40.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Cadmium, Sediment		4.00	MG/KG	12/21/05	6010
Lead, XRF		616	MG/KG	12/01/05	6200
Lead, Sediment		512	MG/KG	12/21/05	6010
Zinc, XRF		1110	MG/KG	12/01/05	6200
Zinc, Sediment		835	MG/KG	12/21/05	6010
Lead (TCLP)		127	UG/L	11/07/05	6010
% Solids		85.0	%	09/22/05	CLP 05.3
Arsenic, XRF		47.0	MG/KG	12/01/05	6200
Cadmium (TCLP)		32.0	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-12/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 382569
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1645
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		24.0	MG/KG	12/21/05	6010
Cadmium, XRF		17.0	MG/KG	12/01/05	6200
Cadmium, Sediment		15.0	MG/KG	12/21/05	6010
Lead, XRF		771	MG/KG	12/01/05	6200
Lead, Sediment		580	MG/KG	12/21/05	6010
Zinc, XRF		2180	MG/KG	12/01/05	6200
Zinc, Sediment		1640	MG/KG	12/21/05	6010
Lead (TCLP)		86.0	UG/L	11/07/05	6010
% Solids		82.6	%	09/22/05	CLP 05.3
Arsenic, XRF		46.0	MG/KG	12/01/05	6200
Cadmium (TCLP)		60.0	UG/L	11/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-10/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382573
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1713
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		21.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Cadmium , Sediment		5.00	MG/KG	12/21/05	6010
Lead, XRF		227	MG/KG	12/01/05	6200
Lead, Sediment		197	MG/KG	12/21/05	6010
Zinc, XRF		764	MG/KG	12/01/05	6200
Zinc, Sediment		636	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	11/09/05	6010
% Solids		82.3	%	09/22/05	CLP 05.3
Arsenic, XRF		16.0	MG/KG	12/01/05	6200
Cadmium (TCLP)		17.0	UG/L	11/09/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/09/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-69/SS01; USE FOR CONFIRMATION, MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Sample Number: 382575
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1645
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		27.0	MG/KG	12/21/05	6010
Cadmium, XRF		20.0	MG/KG	12/01/05	6200
Cadmium, Sediment		14.0	MG/KG	12/21/05	6010
Lead, XRF		837	MG/KG	12/01/05	6200
Lead, Sediment		672	MG/KG	12/21/05	6010
Zinc, XRF		2400	MG/KG	12/01/05	6200
Zinc, Sediment		1660	MG/KG	12/21/05	6010
Lead (TCLP)		105	UG/L	11/09/05	6010
% Solids		81.3	%	09/22/05	CLP 05.3
Arsenic, XRF		53.0	MG/KG	12/01/05	6200
Cadmium (TCLP)		67.0	UG/L	11/09/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/09/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-1000/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382584
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1107
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		13.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Cadmium, Sediment		3.00	MG/KG	12/21/05	6010
Lead, XRF		177	MG/KG	12/07/05	6200
Lead, Sediment		145	MG/KG	12/21/05	6010
Zinc, XRF		692	MG/KG	12/07/05	6200
Zinc, Sediment		517	MG/KG	12/21/05	6010
Lead (TCLP)		188	UG/L	11/09/05	6010
% Solids		85.1	%	09/22/05	CLP 05.3
Arsenic, XRF		12.0	MG/KG	12/07/05	6200
Cadmium (TCLP)		16.0	UG/L	11/09/05	6010
Arsenic (TCLP)	<	50.0	UG/L	11/09/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-04/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382601
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1723
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		9.00	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Cadmium, Sediment	<	1.00	MG/KG	12/21/05	6010
Lead, XRF		34.0	MG/KG	12/08/05	6200
Lead, Sediment		32.0	MG/KG	12/21/05	6010
Zinc, XRF		127	MG/KG	12/08/05	6200
Zinc, Sediment		94.0	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
% Solids		80.6	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-01/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382603
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1107
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		14.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Cadmium , Sediment		3.00	MG/KG	12/21/05	6010
Lead, XRF		170	MG/KG	12/08/05	6200
Lead, Sediment		144	MG/KG	12/21/05	6010
Zinc, XRF		720	MG/KG	12/08/05	6200
Zinc, Sediment		551	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
% Solids		84.3	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200
Cadmium (TCLP)		13.0	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-1000/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 382605
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1620
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		11.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium, Sediment		2.00	MG/KG	12/21/05	6010
Lead, XRF		91.0	MG/KG	12/09/05	6200
Lead, Sediment		79.0	MG/KG	12/21/05	6010
Zinc, XRF		432	MG/KG	12/09/05	6200
Zinc, Sediment		346	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
% Solids		85.0	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium (TCLP)		7.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-17/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 382610
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1535
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		10.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium, Sediment	<	2.00	MG/KG	12/21/05	6010
Lead, XRF		22.0	MG/KG	12/09/05	6200
Lead, Sediment		40.0	MG/KG	12/21/05	6010
Zinc, XRF		123	MG/KG	12/09/05	6200
Zinc, Sediment		93.0	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
% Solids		85.8	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-OSL-01/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382619
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0950
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium , Sediment	<	1.00	MG/KG	12/21/05	6010
Lead, XRF		37.0	MG/KG	12/09/05	6200
Lead, Sediment		37.0	MG/KG	12/21/05	6010
Zinc, XRF		164	MG/KG	12/09/05	6200
Zinc, Sediment		210	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/05/05	6010
% Solids		83.0	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-50/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382623
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0835
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		24.0	MG/KG	12/28/05	6010
Cadmium, XRF		23.0	MG/KG	12/09/05	6200
Cadmium , Sediment		19.0	MG/KG	12/28/05	6010
Lead, XRF		867	MG/KG	12/09/05	6200
Lead, Sediment		677	MG/KG	12/28/05	6010
Zinc, XRF		2990	MG/KG	12/09/05	6200
Zinc, Sediment		2350	MG/KG	12/28/05	6010
Lead (TCLP)		239	UG/L	12/05/05	6010
% Solids		83.1	%	09/22/05	CLP 05.3
Arsenic, XRF		57.0	MG/KG	12/09/05	6200
Cadmium (TCLP)		192	UG/L	12/05/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/05/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-39/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

ANALYST _____

Sample Number: 382628
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0950
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment	<	10.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium , Sediment	<	1.00	MG/KG	12/21/05	6010
Lead, XRF		36.0	MG/KG	12/09/05	6200
Lead, Sediment		41.0	MG/KG	12/21/05	6010
Zinc, XRF		175	MG/KG	12/09/05	6200
Zinc, Sediment		134	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/07/05	6010
% Solids		83.1	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1000/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

ANALYST _____

Sample Number: 382629
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0835
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		31.0	MG/KG	12/28/05	6010
Cadmium, XRF		28.0	MG/KG	12/09/05	6200
Cadmium , Sediment		23.0	MG/KG	12/28/05	6010
Lead, XRF		1120	MG/KG	12/09/05	6200
Lead, Sediment		873	MG/KG	12/28/05	6010
Zinc, XRF		3370	MG/KG	12/09/05	6200
Zinc, Sediment		2660	MG/KG	12/28/05	6010
Lead (TCLP)		240	UG/L	12/07/05	6010
% Solids		84.1	%	09/22/05	CLP 05.3
Arsenic, XRF		71.0	MG/KG	12/09/05	6200
Cadmium (TCLP)		192	UG/L	12/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1001/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382630
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1620
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Sediment		12.0	MG/KG	12/21/05	6010
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium, Sediment		2.00	MG/KG	12/21/05	6010
Lead, XRF		91.0	MG/KG	12/09/05	6200
Lead, Sediment		82.0	MG/KG	12/21/05	6010
Zinc, XRF		465	MG/KG	12/09/05	6200
Zinc, Sediment		350	MG/KG	12/21/05	6010
Lead (TCLP)	<	50.0	UG/L	12/07/05	6010
% Solids		85.5	%	09/22/05	CLP 05.3
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200
Cadmium (TCLP)	<	5.00	UG/L	12/07/05	6010
Arsenic (TCLP)	<	50.0	UG/L	12/07/05	6010

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1002/SS01; USE FOR CONFIRMATION

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 378897 – 379564**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 378897 to 379564
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 10/14/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	10/13/2005		
Arsenic	< 10	<	<	<	<		
Cadmium	< 1	<	<	<	<		
Lead	< 10	<	<	<	<		
Zinc	< 12	<	<	<	<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 378897 to 379564
 Project Code: TF-SED
 Date of Analysis: 10/14/2005
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	5010	100.2	5040	100.8	0.6%
Cadmium	5000	4950	99.0	4950	99.0	0.0%
Lead	5000	4850	97.0	4880	97.6	0.6%
Zinc	5000	4880	97.6	4720	94.4	3.3%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 378897 to 379564
Project Code: TF-SED
Date of Analysis: 10/14/2005
Concentration Units: ppb
Reference Source: SPEX Std 21 #28-74AS exp Mar 06
Method: 6010

Analyte	Conc.	Initial	
		Result	%R ¹
Arsenic	1000	1010	101.0
Cadmium	1000	984	98.4
Lead	1000	997	99.7
Zinc	1000	1000	100.0

Control Limits¹: 90-110%

LCS³: Secondary source laboratory control sample

COMMENTS:

No final LCS was analyzed with this analytical batch.

Form 3 Rev. 07/05

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 379593 – 380105**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 379593 to 380105
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 10/26/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	10/24/2005		
Arsenic	< 10	<	<	<	<		
Cadmium	< 1	<	<	<	<		
Lead	< 10	<	<	<	<		
Zinc	< 12	<	<	<	<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 379593 to 380105
 Project Code: TF-SED
 Date of Analysis: 10/26/2005
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	5060	101.2	4950	99.0	2.2%
Cadmium	5000	4950	99.0	4790	95.8	3.3%
Lead	5000	4870	97.4	4720	94.4	3.1%
Zinc	5000	4920	98.4	4600	92.0	6.7%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL LABORATORY CONTROL SAMPLE (LCS)³**

SEL Sample Range: 379583 to 380105
Project Code: TF-SED
Date of Analysis: 10/26/2005
Concentration Units: ppb
Reference Source: SPEX Std 21 #28-74AS exp Mar 06
Method: 6010

Analyte	Conc.	Initial	
		Result	%R ¹
Arsenic	1000	1010	101.0
Cadmium	1000	972	97.2
Lead	1000	982	98.2
Zinc	1000	991	99.1

Control Limits¹: 90-110%

LCS³: Secondary source laboratory control sample

COMMENTS:

No final LCS was analyzed with this analytical batch.

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/26/2005
 SEL Sample Range: 379593 to 380105 SEL Sample # **379600**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank				Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3260	108.7	85 - 115	0	3210	98.5	3220	98.8	98.6	75 - 125	0.3	20%
Cadmium	300	305	101.7	85 - 115	0	302	99.0	304	99.7	99.3	75 - 125	0.7	20%
Lead	2000	2000	100.0	85 - 115	101	2050	97.5	2070	98.5	98.0	75 - 125	1.0	20%
Zinc	1000	1030	103.0	85 - 115	369	1310	91.4	1430	103.0	97.2	75 - 125	8.8	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 380112 – 380195**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 380112 to 380195
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 11/15/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	11/14/2005		
Arsenic	< 10	<	<	<	<		
Cadmium	< 1	<	<	<	<		
Lead	< 10	<	<	<	<		
Zinc	< 12	<	<	<	<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.11/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 380112 to 380195

Project Code: TF-SED

Date of Analysis: 11/15/2005

Concentration Units: ppb

Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	500	472	94.4	473	94.6	0.2%
Cadmium	500	480	96.0	489	97.8	1.9%
Lead	500	463	92.6	460	92.0	0.7%
Zinc	500	475	95.0	464	92.8	2.3%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP

SEL Sample Range: 380112 to 380195

Project Code: TF-SED

Date of Analysis: 11/15/2005

Concentration Units: ppb

Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4780	95.6	4840	96.8	1.2%
Cadmium	5000	4770	95.4	4860	97.2	1.9%
Lead	5000	4680	93.6	4750	95.0	1.5%
Zinc	5000	4800	96.0	4610	92.2	4.0%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 380112 to 380195
 Project Code: TF-SED
 Date of Analysis: 11/15/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	951	95.1	977	97.7	2.7%
Cadmium	1000	942	94.2	954	95.4	1.3%
Lead	1000	943	94.3	960	96.0	1.8%
Zinc	1000	977	97.7	941	94.1	3.8%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 381331 – 381331**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 381331 to 381331
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 12/9/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	12/8/2005	2	3
Arsenic	< 10	<	<		<		
Cadmium	< 1	<	<		<		
Lead	< 10	<	<		<		
Zinc	< 12	<	<		<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 381331 to 381331
 Project Code: TF-SED
 Date of Analysis: 12/9/2005
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4810	96.2	4540	90.8	5.8%
Cadmium	5000	4890	97.8	4620	92.4	5.7%
Lead	5000	4840	96.8	4560	91.2	6.0%
Zinc	5000	4880	97.6	4580	91.6	6.3%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 381331 to 381331
 Project Code: TF-SED
 Date of Analysis: 12/9/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	1000	100.0	908	90.8	9.6%
Cadmium	1000	1010	101.0	922	92.2	9.1%
Lead	1000	1010	101.0	923	92.3	9.0%
Zinc	1000	1040	104.0	955	95.5	8.5%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 12/9/2005
 SEL Sample Range: 381331 to 381331 SEL Sample # **381331**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	300	270	90.0	85 - 115	88.2	376	106.6	350	97.0	101.8	75 - 125	7.2	20%
Cadmium	300	304	101.3	85 - 115	0	299	98.4	287	94.4	96.4	75 - 125	4.1	20%
Lead	2000	1970	98.5	85 - 115	199	2130	98.0	2030	92.9	95.5	75 - 125	4.8	20%
Zinc	1000	1010	101.0	85 - 115	360	1390	102.0	1290	92.1	97.0	75 - 125	7.5	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 382567 – 382630**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 382567 to 382630
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 12/21/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	12/20/2005		
Arsenic	< 10	<	<	<	<		
Cadmium	< 1	<	<	<	<		
Lead	< 10	<	<	<	<		
Zinc	< 12	<	<	<	<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 382567 to 382630
 Project Code: TF-SED
 Date of Analysis: 12/21/2005
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4960	99.2	4940	98.8	0.4%
Cadmium	5000	5040	100.8	5000	100.0	0.8%
Lead	5000	4980	99.6	4920	98.4	1.2%
Zinc	5000	5000	100.0	4940	98.8	1.2%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 382567 to 382630
 Project Code: TF-SED
 Date of Analysis: 12/21/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	944	94.4	966	96.6	2.3%
Cadmium	1000	955	95.5	977	97.7	2.3%
Lead	1000	968	96.8	983	98.3	1.5%
Zinc	1000	985	98.5	991	99.1	0.6%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 12/21/2005
 SEL Sample Range: 382507 to 382630 SEL Sample # **382573**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2930	97.7	85 - 115	104	2960	97.5	3060	100.9	99.2	75 - 125	3.3	20%
Cadmium	300	334	111.3	85 - 115	25	344	95.5	357	99.4	97.5	75 - 125	3.7	20%
Lead	2000	2170	108.5	85 - 115	983	3040	94.8	3180	101.2	98.0	75 - 125	4.5	20%
Zinc	1000	1100	110.0	85 - 115	3180	4010	75.5	4290	100.9	88.2	75 - 125	6.7	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Oklahoma SEL

ICP QC Data

**QC Information Applicable to:
Lab IDs 378872 – 382629**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 378872 to 382629
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 12/28/2005
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	12/27/2005		
Arsenic	< 10	<	<	<	<		
Cadmium	< 1	<	<	<	<		
Lead	< 10	<	<	<	<		
Zinc	< 12	<	<	<	<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 378872 to 382629
 Project Code: TF-SED
 Date of Analysis: 12/28/2005
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4980	99.6	5060	101.2	1.6%
Cadmium	5000	4950	99.0	5050	101.0	2.0%
Lead	5000	4860	97.2	4960	99.2	2.0%
Zinc	5000	4970	99.4	4990	99.8	0.4%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 378872 to 382629
 Project Code: TF-SED
 Date of Analysis: 12/28/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	955	95.5	982	98.2	2.8%
Cadmium	1000	943	94.3	964	96.4	2.2%
Lead	1000	942	94.2	950	95.0	0.8%
Zinc	1000	977	97.7	981	98.1	0.4%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

Oklahoma SEL

TCLP QC Data

**QC Information Applicable to:
Lab IDs 378870 - 382584**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 378870 to 382584
 Preparation Blank Matrix: liquid
 Concentration Units: ppb
 Date of Analysis 11/9/2005
 Method: 6010
 Batch: 1

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	11/7/2005	11/7/2005	11/9/2005
Arsenic	< 50	<	<	<	<	<	<
Cadmium	< 5	<	<	<	<	<	<
Lead	< 50	<	<	<	<	<	<
Zinc	< 60	<	<	<	<	<	<

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - TCLP**

SEL Sample Range: 378870 to 382584

Project Code: TF-SED

Date of Analysis: 11/9/2005

Concentration Units: ppb

Method: 6010

Batch: 1

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	500	464	92.8	492	98.4	5.9%
Cadmium	500	465	93.0	476	95.2	2.3%
Lead	500	454	90.8	441	88.2	2.9%
Zinc	500	452	90.4	472	94.4	4.3%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - TCLP**

SEL Sample Range: 378870 to 382584

Project Code: TF-SED

Date of Analysis: 11/9/2005

Concentration Units: ppb

Method: 6010

Batch: 1

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4570	91.4	4920	98.4	7.4%
Cadmium	5000	4790	95.8	4780	95.6	0.2%
Lead	5000	4720	94.4	4670	93.4	1.1%
Zinc	5000	4820	96.4	4610	92.2	4.5%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP LABORATORY CONTROL SAMPLE (LCS)³**

SEL Sample Range: 378870 to 382584
 Project Code: TF-SED
 Date of Analysis: 11/9/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010 Batch: 1

Analyte	Conc.	LCS	
		Result	%R ¹
Arsenic	1000	901	90.1
Cadmium	1000	924	92.4
Lead	1000	943	94.3
Zinc	1000	961	96.1

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # **378882**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3000	100.0	85 - 115	70.9	3150	102.6	3070	100.0	101.3	75 - 125	2.6	20%
Cadmium	300	320	106.7	85 - 115	15.8	327	97.3	339	101.0	99.1	75 - 125	3.6	20%
Lead	2000	2100	105.0	85 - 115	115.7	2130	95.9	2240	101.2	98.5	75 - 125	5.0	20%
Zinc	1000	1080	108.0	85 - 115	26000	25800	-18.5	41600	1444.4	713.0	75 - 125	46.9	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV. Poor recoveries on the MS/MSD for Zinc are attributable to the high concentration of the analyte in the sample.

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # **381331**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2980	99.3	85 - 115	0	2980	100.0	2980	100.0	100.0	75 - 125	0.0	20%
Cadmium	300	319	106.3	85 - 115	0	298	93.4	301	94.4	93.9	75 - 125	1.0	20%
Lead	2000	2090	104.5	85 - 115	0	1920	91.9	1950	93.3	92.6	75 - 125	1.6	20%
Zinc	1000	1000	100.0	85 - 115	0	983	98.3	996	99.6	99.0	75 - 125	1.3	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/9/2005
 SEL Sample Range: 378870 to 382584 SEL Sample # **381344**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2980	99.3	85 - 115	0	3090	103.7	3150	105.7	104.7	75 - 125	1.9	20%
Cadmium	300	319	106.3	85 - 115	0	314	98.4	323	101.3	99.8	75 - 125	2.8	20%
Lead	2000	2090	104.5	85 - 115	0	2040	97.6	2100	100.5	99.0	75 - 125	2.9	20%
Zinc	1000	1000	100.0	85 - 115	0	1020	102.0	1040	104.0	103.0	75 - 125	1.9	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Oklahoma SEL

TCLP QC Data

**QC Information Applicable to:
Lab IDs 380105 - 382630**

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 380105 to 382630
 Preparation Blank Matrix: liquid
 Concentration Units: ppb
 Date of Analysis 12/7/2005
 Method: 6010
 Batch: 2

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	12/5/2005	12/5/2005	
Arsenic	< 50	<	<	<	<	<	
Cadmium	< 5	<	<	<	<	<	
Lead	< 50	<	<	<	<	<	
Zinc	< 60	<	<	<	<	<	

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - TCLP**

SEL Sample Range: 380105 to 382630

Project Code: TF-SED

Date of Analysis: 12/7/2005

Concentration Units: ppb

Method: 6010

Batch: 2

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	500	491	98.2	481	96.2	2.1%
Cadmium	500	485	97.0	494	98.8	1.8%
Lead	500	474	94.8	480	96.0	1.3%
Zinc	500	475	95.0	463	92.6	2.6%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - TCLP**

SEL Sample Range: 380105 to 382630
 Project Code: TF-SED
 Date of Analysis: 12/7/2005
 Concentration Units: ppb
 Method: 6010
 Batch: 2

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4660	93.2	4980	99.6	6.6%
Cadmium	5000	4750	95.0	5090	101.8	6.9%
Lead	5000	4690	93.8	5030	100.6	7.0%
Zinc	5000	4740	94.8	4830	96.6	1.9%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP LABORATORY CONTROL SAMPLE (LCS)³**

SEL Sample Range: 380105 to 382630
 Project Code: TF-SED
 Date of Analysis: 12/7/2005
 Concentration Units: ppb
 Reference Source: SPEX Std 21 #28-74AS exp Mar 06
 Method: 6010 Batch: 2

Analyte	Conc.	LCS	
		Result	%R ¹
Arsenic	1000	951	95.1
Cadmium	1000	922	92.2
Lead	1000	924	92.4
Zinc	1000	949	94.9

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 12/05

Oklahoma SEL

Analytical Data

RI Phase I

Soil / Sediment Data

Samples for only XRF Analysis

Sample Number: 378867
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 0949
Date Received: 07/21/2005
Date Completed: 11/01/2005
Collected By: DSB
PWS Id:
Location Code: W1
Station:
Facility:
Report Date: 02/07/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

~~LAND DISPOSITION~~
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		26.0	MG/KG	10/31/05	6200
Lead, XRF		256	MG/KG	10/31/05	6200
Zinc, XRF		2180	MG/KG	10/31/05	6200
Arsenic, XRF		20.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-06/SD01

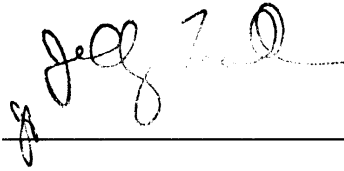
SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:
REPRINTED FINAL REPORT

*

ANALYST

Labs Analyzing this Sample: Metals



Sample Number: 378868
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1004
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		47.0	MG/KG	10/31/05	6200
Lead, XRF		425	MG/KG	10/31/05	6200
Zinc, XRF		3500	MG/KG	10/31/05	6200
Arsenic, XRF		31.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-05/SD01

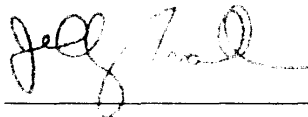
SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

Labs Analyzing this Sample:Metals

ANALYST



Sample Number: 378869
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1020
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		49.0	MG/KG	10/31/05	6200
Lead, XRF		412	MG/KG	10/31/05	6200
Zinc, XRF		3140	MG/KG	10/31/05	6200
Arsenic, XRF		28.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-04/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378874
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1128
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		21.0	MG/KG	10/31/05	6200
Lead, XRF		339	MG/KG	10/31/05	6200
Zinc, XRF		1710	MG/KG	10/31/05	6200
Arsenic, XRF		27.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFA

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SMP-02/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378875
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1148
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	10/31/05	6200
Lead, XRF		180	MG/KG	10/31/05	6200
Zinc, XRF		1080	MG/KG	10/31/05	6200
Arsenic, XRF		14.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SMP-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 378876
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1405
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	10/31/05	6200
Lead, XRF		239	MG/KG	10/31/05	6200
Zinc, XRF		808	MG/KG	10/31/05	6200
Arsenic, XRF	<	10.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD5-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378877
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1417
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		265	MG/KG	10/31/05	6200
Lead, XRF		2940	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Arsenic, XRF		195	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378878
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1428
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		702	MG/KG	10/31/05	6200
Lead, XRF		3410	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Arsenic, XRF		217	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-02/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378879
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1433
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		255	MG/KG	10/31/05	6200
Lead, XRF	>	5500	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Arsenic, XRF		588	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

MSR-03/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Labs Analyzing this Sample:Metals

Sample Number: 378880
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1456
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		121	MG/KG	10/31/05	6200
Lead, XRF		975	MG/KG	10/31/05	6200
Zinc, XRF	>	7000	MG/KG	10/31/05	6200
Arsenic, XRF		57.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD4-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378881
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0726
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		151	MG/KG	10/31/05	6200
Lead, XRF		445	MG/KG	10/31/05	6200
Zinc, XRF		6220	MG/KG	10/31/05	6200
Arsenic, XRF		26.0	MG/KG	10/31/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378888
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0812
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: TS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		362	MG/KG	11/01/05	6200
Lead, XRF		1540	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		96.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PDI-03/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378889
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0839
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		330	MG/KG	11/01/05	6200
Lead, XRF		1200	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		84.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD2-02/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378890
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0851
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		44.0	MG/KG	11/01/05	6200
Lead, XRF		942	MG/KG	11/01/05	6200
Zinc, XRF		4840	MG/KG	11/01/05	6200
Arsenic, XRF		52.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD2-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378891
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0914
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		43.0	MG/KG	11/01/05	6200
Lead, XRF		375	MG/KG	11/01/05	6200
Zinc, XRF		2860	MG/KG	11/01/05	6200
Arsenic, XRF		20.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD3-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378892
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0914
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		59.0	MG/KG	11/01/05	6200
Lead, XRF		393	MG/KG	11/01/05	6200
Zinc, XRF		2770	MG/KG	11/01/05	6200
Arsenic, XRF		23.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD3-1000/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378893
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0922
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		220	MG/KG	11/01/05	6200
Lead, XRF		1060	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		68.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

PD3-02/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378894
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1054
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/01/05	6200
Lead, XRF		923	MG/KG	11/01/05	6200
Zinc, XRF		1390	MG/KG	11/01/05	6200
Arsenic, XRF		60.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

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Sample Receiving: (405) 702-1113

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ANALYST

Sample Number: 378896
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1103
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		55.0	MG/KG	11/01/05	6200
Lead, XRF		259	MG/KG	11/01/05	6200
Zinc, XRF		6330	MG/KG	11/01/05	6200
Arsenic, XRF		19.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL &MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-03/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 378897
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1120
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		975	MG/KG	11/01/05	6200
Lead, XRF		3940	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		277	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-04/SD01;SAMPLE LOCTION WAS CHOSEN FOR SITE SPECIFIC MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 378898
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1120
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		891	MG/KG	11/01/05	6200
Lead, XRF		3930	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		267	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-04/SD01MS;USE THESE BOTTLES FOR SITE SPECIFIC MATRIX SPIKE PARENT SAMPLE OFF-04/SD0

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 378899
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1120
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		700	MG/KG	11/01/05	6200
Lead, XRF		3670	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		238	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-04/SD01MSD;USE THESE BOTTLES FOR SITE SPECIFIC MATRIX SPIKE DUP PARENT SAMPLE
OFF-04/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

[Handwritten signature]

Sample Number: 378900
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1157
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		120	MG/KG	11/01/05	6200
Lead, XRF		2060	MG/KG	11/01/05	6200
Zinc, XRF		6030	MG/KG	11/01/05	6200
Arsenic, XRF		142	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

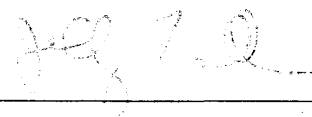
SAMPLERS COMMENTS:
OFF-05/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 378901
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1201
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		114	MG/KG	11/01/05	6200
Lead, XRF		417	MG/KG	11/01/05	6200
Zinc, XRF		6730	MG/KG	11/01/05	6200
Arsenic, XRF		24.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-06/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378902
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1206
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		987	MG/KG	11/01/05	6200
Lead, XRF		1220	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		79.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-07/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 378903
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1212
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		166	MG/KG	11/01/05	6200
Lead, XRF		769	MG/KG	11/01/05	6200
Zinc, XRF		6230	MG/KG	11/01/05	6200
Arsenic, XRF		59.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-08/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 378904
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1212
Date Received: 07/21/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W1
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		197	MG/KG	11/01/05	6200
Lead, XRF		820	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF		63.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-1000/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample:Metals

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ANALYST

Sample Number: 379561
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1633
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/01/05	6200
Lead, XRF		140	MG/KG	11/01/05	6200
Zinc, XRF		520	MG/KG	11/01/05	6200
Arsenic, XRF		16.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-11/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 379562
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1640
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		12.0	MG/KG	11/01/05	6200
Lead, XRF		141	MG/KG	11/01/05	6200
Zinc, XRF		2120	MG/KG	11/01/05	6200
Arsenic, XRF		16.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-12/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379563
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1648
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	11/01/05	6200
Lead, XRF		182	MG/KG	11/01/05	6200
Zinc, XRF		3590	MG/KG	11/01/05	6200
Arsenic, XRF		16.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

OFF-13/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379564
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0916
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		651	MG/KG	11/01/05	6200
Lead, XRF	>	5500	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF	>	650	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-01/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379565
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0916
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		654	MG/KG	11/01/05	6200
Lead, XRF	>	5500	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF	>	650	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-1000/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379567
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0934
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/01/05	6200
Lead, XRF	<	20.0	MG/KG	11/01/05	6200
Zinc, XRF	<	50.0	MG/KG	11/01/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-01/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379568
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0824
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS ID:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		469	MG/KG	11/01/05	6200
Lead, XRF	>	5500	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF	>	650	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379569
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0840
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/01/05	6200
Lead, XRF	<	20.0	MG/KG	11/01/05	6200
Zinc, XRF		111	MG/KG	11/01/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-02/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379570
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1431
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		94.0	MG/KG	11/01/05	6200
Lead, XRF	>	5500	MG/KG	11/01/05	6200
Zinc, XRF	>	7000	MG/KG	11/01/05	6200
Arsenic, XRF	>	650	MG/KG	11/01/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-03/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 379571
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1440
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		114	MG/KG	11/02/05	6200
Lead, XRF		5280	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		328	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-03/SS02; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379572
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1450
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		94.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-03/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 379573
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1410
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		753	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-04/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 379574
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1417
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		43.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-04/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 379576
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1029
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		340	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		504	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-05/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379577
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1036
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		94.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-05/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379578
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1036
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		80.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE


LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-1001/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379579
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1103
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		198	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		545	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-06/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379580
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1112
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		76.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		4380	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-06/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379581
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1200
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		202	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-07/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379582
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1219
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		46.0	MG/KG	11/02/05	6200
Lead, XRF		5290	MG/KG	11/02/05	6200
Zinc, XRF		7440	MG/KG	11/02/05	6200
Arsenic, XRF		334	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-07/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 379583
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1226
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		61.0	MG/KG	11/02/05	6200
Lead, XRF		24.0	MG/KG	11/02/05	6200
Zinc, XRF		3460	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-07/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379584
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1514
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		255	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-08/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379585
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1533
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF		23.0	MG/KG	11/02/05	6200
Zinc, XRF		127	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-08/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 379586
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1130
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		200	MG/KG	11/02/05	6200
Lead, XRF		4780	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		321	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-11/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379587
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1135
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		99.0	MG/KG	11/02/05	6200
Lead, XRF		2980	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		186	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-11/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379588
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1144
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		56.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-11/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 379589
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1558
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		54.0	MG/KG	11/02/05	6200
Lead, XRF		4720	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		354	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-15/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379590
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1610
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		232	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		505	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-15/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample: Metals

Sample Number: 379591
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1620
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		33.0	MG/KG	11/02/05	6200
Lead, XRF		47.0	MG/KG	11/02/05	6200
Zinc, XRF		922	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-15/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 379592
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1202
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		556	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-09/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST



Sample Number: 379595
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1322
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		71.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-09/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379596
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1007
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-10/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 379597
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1044
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/02/05	6200
Lead, XRF	<	20.0	MG/KG	11/02/05	6200
Zinc, XRF		81.0	MG/KG	11/02/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-10/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379598
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1400
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-13/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379599
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1459
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		199	MG/KG	11/02/05	6200
Lead, XRF	>	5000	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		510	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-13/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379601
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0832
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		156	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF		372	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-14/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379602
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0832
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		202	MG/KG	11/02/05	6200
Lead, XRF	>	5500	MG/KG	11/02/05	6200
Zinc, XRF	>	7000	MG/KG	11/02/05	6200
Arsenic, XRF	>	650	MG/KG	11/02/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-1003/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379603
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0902
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		97.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-14/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379604
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0921
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		444	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUELS
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-16/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 379605
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0939
Date Received: 07/29/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W2
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		81.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUELS

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TR-16/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample:Metals

Sample Number: 380095
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1558
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		91.0	MG/KG	11/04/05	6200
Lead, XRF		264	MG/KG	11/04/05	6200
Zinc, XRF		1590	MG/KG	11/04/05	6200
Arsenic, XRF		14.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-50/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*
ANALYST 

Sample Number: 380096
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1600
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		86.0	MG/KG	11/04/05	6200
Lead, XRF		36.0	MG/KG	11/04/05	6200
Zinc, XRF		431	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-50/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST _____

Sample Number: 380097
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1605
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		67.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		265	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-50/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380098
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1510
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		243	MG/KG	11/04/05	6200
Lead, XRF		6140	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF		406	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-40/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380099
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1515
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		97.0	MG/KG	11/04/05	6200
Lead, XRF		2700	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF		179	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-40/SS02; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380100
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1520
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		77.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-40/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380101
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1530
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	>	1000	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF		416	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-47/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380102
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1535
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		16.0	MG/KG	11/04/05	6200
Lead, XRF		53.0	MG/KG	11/04/05	6200
Zinc, XRF		543	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-47/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380103
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1540
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		69.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-47/SS03; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380104
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1445
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		16.0	MG/KG	11/04/05	6200
Lead, XRF		705	MG/KG	11/04/05	6200
Zinc, XRF		2030	MG/KG	11/04/05	6200
Arsenic, XRF		39.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-49/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 380106
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1455
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		63.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-49/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380107
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1455
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		70.0	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1013/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380108
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1400
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		12.0	MG/KG	11/03/05	6200
Lead, XRF		42.0	MG/KG	11/03/05	6200
Zinc, XRF		1230	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-12/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380109
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1337
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		28.0	MG/KG	11/03/05	6200
Lead, XRF		626	MG/KG	11/03/05	6200
Zinc, XRF		2450	MG/KG	11/03/05	6200
Arsenic, XRF		41.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1002/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 380110
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1257
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		38.0	MG/KG	11/03/05	6200
Lead, XRF		828	MG/KG	11/03/05	6200
Zinc, XRF		3770	MG/KG	11/03/05	6200
Arsenic, XRF		55.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-10/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380111
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1300
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		487	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-10/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380113
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1156
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		13.0	MG/KG	11/03/05	6200
Lead, XRF		246	MG/KG	11/03/05	6200
Zinc, XRF		1570	MG/KG	11/03/05	6200
Arsenic, XRF		14.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-14/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380116
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1010
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		225	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-01/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380117
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1020
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		132	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-01/SS03; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*
ANALYST _____

Sample Number: 380118
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1240
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		25.0	MG/KG	11/03/05	6200
Lead, XRF		631	MG/KG	11/03/05	6200
Zinc, XRF		3570	MG/KG	11/03/05	6200
Arsenic, XRF		43.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-09/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380119
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1242
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF		143	MG/KG	11/03/05	6200
Zinc, XRF		846	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-09/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380120
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1245
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		101	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-09/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380121
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1126
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		16.0	MG/KG	11/03/05	6200
Lead, XRF		36.0	MG/KG	11/03/05	6200
Zinc, XRF		1120	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-13/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380122
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1127
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/03/05	6200
Lead, XRF	<	20.0	MG/KG	11/03/05	6200
Zinc, XRF		62.0	MG/KG	11/03/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/03/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-13/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380123
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1129
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		61.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-13/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380124
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1230
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		25.0	MG/KG	11/04/05	6200
Lead, XRF		187	MG/KG	11/04/05	6200
Zinc, XRF		2450	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-08/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380125
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0831
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		287	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-12/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380126
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0831
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		70.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-12/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380127
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1202
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		89.0	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-17/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
Labs Analyzing this Sample:Metals

ANALYST _____

Sample Number: 380128
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1227
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		66.0	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-17/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380129
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1242
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		384	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-17/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380130
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1112
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		85.0	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-18/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380131
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1136
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		71.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-18/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380132
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1136
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		66.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-1004/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380133
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0857
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		513	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-19/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380135
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0939
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		85.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-19/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380136
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1035
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		173	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-20/SS1

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380137
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1052
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/04/05	6200
Lead, XRF	<	20.0	MG/KG	11/04/05	6200
Zinc, XRF		79.0	MG/KG	11/04/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-20/SS3; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380138
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1000
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		667	MG/KG	11/04/05	6200
Lead, XRF	>	5500	MG/KG	11/04/05	6200
Zinc, XRF	>	7000	MG/KG	11/04/05	6200
Arsenic, XRF	>	650	MG/KG	11/04/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-21/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST _____

Sample Number: 380139
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1015
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		90.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TR-21/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380141
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0856
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		17.0	MG/KG	11/07/05	6200
Lead, XRF		41.0	MG/KG	11/07/05	6200
Zinc, XRF		1360	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-06/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380142
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0857
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		224	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-06/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380143
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0859
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF	<	50.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-06/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380144
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0857
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		193	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1001/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380145
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0910
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		15.0	MG/KG	11/07/05	6200
Lead, XRF		894	MG/KG	11/07/05	6200
Zinc, XRF		1870	MG/KG	11/07/05	6200
Arsenic, XRF		58.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-07/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380146
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0918
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		32.0	MG/KG	11/07/05	6200
Lead, XRF		158	MG/KG	11/07/05	6200
Zinc, XRF		2160	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-23/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380147
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0920
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		565	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-23/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380148
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0923
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		96.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-23/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380150
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0935
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		377	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-22/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380151
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0938
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		65.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-22/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380152
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0935
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		238	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1005/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 380153
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0955
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		25.0	MG/KG	11/07/05	6200
Lead, XRF		113	MG/KG	11/07/05	6200
Zinc, XRF		1780	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-21/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380154
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0957
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		61.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL& MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-21/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380155
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1000
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		75.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-21/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380156
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1012
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		14.0	MG/KG	11/07/05	6200
Lead, XRF		48.0	MG/KG	11/07/05	6200
Zinc, XRF		864	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-20/SS01; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:
SAMPLE WAS SHAKEN/MIXED AND REANALYZED TO CONFIRM RESULTS

*

ANALYST _____

Sample Number: 380157
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1015
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		257	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-20/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Sample Number: 380158
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1020
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF	<	50.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-20/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380159
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1032
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		46.0	MG/KG	11/07/05	6200
Lead, XRF		930	MG/KG	11/07/05	6200
Zinc, XRF		4780	MG/KG	11/07/05	6200
Arsenic, XRF		58.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-26/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380160
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1035
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		55.0	MG/KG	11/07/05	6200
Lead, XRF		1250	MG/KG	11/07/05	6200
Zinc, XRF		5470	MG/KG	11/07/05	6200
Arsenic, XRF		76.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-26/SS02; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

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Sample Receiving: (405) 702-1113

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ANALYST

Sample Number: 380162
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1055
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		34.0	MG/KG	11/07/05	6200
Lead, XRF		925	MG/KG	11/07/05	6200
Zinc, XRF		3520	MG/KG	11/07/05	6200
Arsenic, XRF		51.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-25/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380164
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1105
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		64.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-25/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380166
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1130
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		13.0	MG/KG	11/07/05	6200
Lead, XRF		708	MG/KG	11/07/05	6200
Zinc, XRF		1370	MG/KG	11/07/05	6200
Arsenic, XRF		49.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-24/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380167
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1135
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		126	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-24/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380168
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1140
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/07/05	6200
Lead, XRF	<	20.0	MG/KG	11/07/05	6200
Zinc, XRF		62.0	MG/KG	11/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-24/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

*

Sample Number: 380169
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1150
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		51.0	MG/KG	11/07/05	6200
Lead, XRF		3230	MG/KG	11/07/05	6200
Zinc, XRF	>	7000	MG/KG	11/07/05	6200
Arsenic, XRF		199	MG/KG	11/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-39/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380171
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1200
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Lead, XRF	<	20.0	MG/KG	11/08/05	6200
Zinc, XRF		246	MG/KG	11/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-39/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380172
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1200
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Lead, XRF	<	20.0	MG/KG	11/08/05	6200
Zinc, XRF		383	MG/KG	11/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP=1010/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380173
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1320
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		25.0	MG/KG	11/08/05	6200
Lead, XRF		702	MG/KG	11/08/05	6200
Zinc, XRF		3920	MG/KG	11/08/05	6200
Arsenic, XRF		43.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-19/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380174
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1322
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		59.0	MG/KG	11/08/05	6200
Lead, XRF		1550	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		95.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-19/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380175
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1325
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Lead, XRF	<	20.0	MG/KG	11/08/05	6200
Zinc, XRF		83.0	MG/KG	11/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-19/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380176
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1320
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		24.0	MG/KG	11/08/05	6200
Lead, XRF		533	MG/KG	11/08/05	6200
Zinc, XRF		3400	MG/KG	11/08/05	6200
Arsenic, XRF		35.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1004/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380177
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1338
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		109	MG/KG	11/08/05	6200
Lead, XRF		2050	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		117	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-27/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380178
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1340
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		290	MG/KG	11/08/05	6200
Lead, XRF	>	5500	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		441	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-27/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380179
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1344
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		147	MG/KG	11/08/05	6200
Lead, XRF		2910	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		281	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-27/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380180
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1410
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		77.0	MG/KG	11/08/05	6200
Lead, XRF		1810	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		112	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-18/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380181
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1412
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		29.0	MG/KG	11/08/05	6200
Lead, XRF		395	MG/KG	11/08/05	6200
Zinc, XRF		3340	MG/KG	11/08/05	6200
Arsenic, XRF		21.0	MG/KG	11/08/05	6200

SOURCE: TUL;SA FUEL & MANUFA
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-18/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380183
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1422
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		41.0	MG/KG	11/08/05	6200
Lead, XRF		845	MG/KG	11/08/05	6200
Zinc, XRF		4900	MG/KG	11/08/05	6200
Arsenic, XRF		45.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-17/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380184
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1425
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Lead, XRF	<	20.0	MG/KG	11/08/05	6200
Zinc, XRF		146	MG/KG	11/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-17/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

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ANALYST

Sample Number: 380186
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1437
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		48.0	MG/KG	11/08/05	6200
Lead, XRF		3060	MG/KG	11/08/05	6200
Zinc, XRF	>	7000	MG/KG	11/08/05	6200
Arsenic, XRF		204	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-16/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380187
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1440
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/08/05	6200
Lead, XRF		114	MG/KG	11/08/05	6200
Zinc, XRF		364	MG/KG	11/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-16/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 380188
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1444
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF		317	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-16/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380189
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1444
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF		466	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-1003/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380191
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1515
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF		60.0	MG/KG	11/09/05	6200
Zinc, XRF		773	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-29/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380192
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1520
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF	<	50.0	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-29/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380193
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1515
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		56.0	MG/KG	11/09/05	6200
Lead, XRF		1690	MG/KG	11/09/05	6200
Zinc, XRF		6600	MG/KG	11/09/05	6200
Arsenic, XRF		102	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1007/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380194
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1215
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		130	MG/KG	11/09/05	6200
Lead, XRF		992	MG/KG	11/09/05	6200
Zinc, XRF	>	7000	MG/KG	11/09/05	6200
Arsenic, XRF		57.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-32/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380196
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1225
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF		64.0	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-32/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380197
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1225
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF		63.0	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1008/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380198
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1325
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		64.0	MG/KG	11/09/05	6200
Lead, XRF		3950	MG/KG	11/09/05	6200
Zinc, XRF	>	7000	MG/KG	11/09/05	6200
Arsenic, XRF		276	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-38/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380199
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1330
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF		181	MG/KG	11/09/05	6200
Zinc, XRF		951	MG/KG	11/09/05	6200
Arsenic, XRF		13.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-38/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380200
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1420
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		342	MG/KG	11/09/05	6200
Lead, XRF		4740	MG/KG	11/09/05	6200
Zinc, XRF	>	7000	MG/KG	11/09/05	6200
Arsenic, XRF		316	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-48/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample:Metals

Sample Number: 380201
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1422
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		322	MG/KG	11/09/05	6200
Lead, XRF	>	5500	MG/KG	11/09/05	6200
Zinc, XRF	>	7000	MG/KG	11/09/05	6200
Arsenic, XRF	>	650	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-48/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

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ANALYST _____

Sample Number: 380202
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1425
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF		50.0	MG/KG	11/09/05	6200
Zinc, XRF		131	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-48/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380203
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1337
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		23.0	MG/KG	11/09/05	6200
Lead, XRF		697	MG/KG	11/09/05	6200
Zinc, XRF		2500	MG/KG	11/09/05	6200
Arsenic, XRF		43.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-11/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380204
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1340
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/09/05	6200
Lead, XRF	<	20.0	MG/KG	11/09/05	6200
Zinc, XRF		738	MG/KG	11/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-11/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 380205
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1345
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF	<	50.0	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-11/SS03; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380206
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1145
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		346	MG/KG	11/15/05	6200
Lead, XRF	>	5500	MG/KG	11/15/05	6200
Zinc, XRF	>	7000	MG/KG	11/15/05	6200
Arsenic, XRF		410	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-30/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380207
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1150
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		13.0	MG/KG	11/15/05	6200
Lead, XRF		77.0	MG/KG	11/15/05	6200
Zinc, XRF		1620	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-30/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380208
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1153
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		70.0	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-30/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380209
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1200
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		33.0	MG/KG	11/15/05	6200
Lead, XRF		381	MG/KG	11/15/05	6200
Zinc, XRF		4470	MG/KG	11/15/05	6200
Arsenic, XRF		22.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-31/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380210
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1202
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		475	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-31/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



*

ANALYST _____

Sample Number: 380211
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1205
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF		24.0	MG/KG	11/15/05	6200
Zinc, XRF		51.0	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-31/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380212
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1302
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF		2020	MG/KG	11/15/05	6200
Zinc, XRF		2450	MG/KG	11/15/05	6200
Arsenic, XRF		166	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-37/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380213
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1305
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		21.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		911	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-37/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380214
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1308
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		69.0	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-37/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380215
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1033
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		17.0	MG/KG	11/15/05	6200
Lead, XRF		438	MG/KG	11/15/05	6200
Zinc, XRF		2160	MG/KG	11/15/05	6200
Arsenic, XRF		25.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-28/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380216
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1035
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		245	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-28/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380217
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1040
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF	<	20.0	MG/KG	11/15/05	6200
Zinc, XRF		54.0	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-28/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380219
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1055
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/15/05	6200
Lead, XRF		138	MG/KG	11/15/05	6200
Zinc, XRF		1190	MG/KG	11/15/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-36/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST _____

Sample Number: 380220
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1055
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		15.0	MG/KG	11/15/05	6200
Lead, XRF		173	MG/KG	11/15/05	6200
Zinc, XRF		1560	MG/KG	11/15/05	6200
Arsenic, XRF		11.0	MG/KG	11/15/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1009/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380221
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1100
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Zinc, XRF		79.0	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-36/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380222
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1110
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		160	MG/KG	11/17/05	6200
Lead, XRF		666	MG/KG	11/17/05	6200
Zinc, XRF	>	7000	MG/KG	11/17/05	6200
Arsenic, XRF		53.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-35/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380223
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1114
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF		61.0	MG/KG	11/17/05	6200
Zinc, XRF		476	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-35/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380224
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1118
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Zinc, XRF		246	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-35/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380225
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1125
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		19.0	MG/KG	11/17/05	6200
Lead, XRF		24.0	MG/KG	11/17/05	6200
Zinc, XRF		2140	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-34/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380226
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1128
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF		23.0	MG/KG	11/17/05	6200
Zinc, XRF		185	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-34/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 380227
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1130
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Zinc, XRF		61.0	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-34/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380228
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1333
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Zinc, XRF		74.0	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-38/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380229
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1346
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		155	MG/KG	11/17/05	6200
Lead, XRF		4720	MG/KG	11/17/05	6200
Zinc, XRF	>	7000	MG/KG	11/17/05	6200
Arsenic, XRF		309	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-41/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380230
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1418
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF		2270	MG/KG	11/17/05	6200
Zinc, XRF		890	MG/KG	11/17/05	6200
Arsenic, XRF		171	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-42/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380231
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1420
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF		65.0	MG/KG	11/17/05	6200
Zinc, XRF		568	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-42/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380233
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1442
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		153	MG/KG	11/17/05	6200
Lead, XRF		2180	MG/KG	11/17/05	6200
Zinc, XRF	>	7000	MG/KG	11/17/05	6200
Arsenic, XRF		152	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-43/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380234
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1442
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		158	MG/KG	11/17/05	6200
Lead, XRF		1940	MG/KG	11/17/05	6200
Zinc, XRF	>	7000	MG/KG	11/17/05	6200
Arsenic, XRF		129	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-1011/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380235
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1445
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		124	MG/KG	11/17/05	6200
Lead, XRF		543	MG/KG	11/17/05	6200
Zinc, XRF		3090	MG/KG	11/17/05	6200
Arsenic, XRF		34.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-43/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:



*

ANALYST _____

Sample Number: 380236
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1450
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF	<	20.0	MG/KG	11/17/05	6200
Zinc, XRF		155	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-43/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380237
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1503
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/17/05	6200
Lead, XRF		120	MG/KG	11/17/05	6200
Zinc, XRF		1530	MG/KG	11/17/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/17/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-45/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380238
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1505
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		86.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-45/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380239
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1510
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		61.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-45/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380241
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1522
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		77.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-46/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380242
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1522
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		71.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-1012/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

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Sample Receiving: (405) 702-1113

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ANALYST

Sample Number: 380244
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1548
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		63.0	MG/KG	11/18/05	6200
Lead, XRF		401	MG/KG	11/18/05	6200
Zinc, XRF		2470	MG/KG	11/18/05	6200
Arsenic, XRF		22.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-44/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST _____

Sample Number: 380245
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1048
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		14.0	MG/KG	11/18/05	6200
Lead, XRF		633	MG/KG	11/18/05	6200
Zinc, XRF		1860	MG/KG	11/18/05	6200
Arsenic, XRF		34.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380246
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1056
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF		120	MG/KG	11/18/05	6200
Zinc, XRF		983	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-03/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380247
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1057
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		226	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-03/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380248
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1059
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		133	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-03/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380249
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1116
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		460	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-04/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380250
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1210
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		42.0	MG/KG	11/18/05	6200
Lead, XRF		638	MG/KG	11/18/05	6200
Zinc, XRF		3730	MG/KG	11/18/05	6200
Arsenic, XRF		39.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

SP-15/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 380251
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1238
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF		211	MG/KG	11/18/05	6200
Zinc, XRF		888	MG/KG	11/18/05	6200
Arsenic, XRF		13.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-33/SS01; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380252
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1240
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		57.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-33/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380253
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1245
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		41.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-33/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 380254
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1350
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		147	MG/KG	11/18/05	6200
Lead, XRF		3440	MG/KG	11/18/05	6200
Zinc, XRF	>	7000	MG/KG	11/18/05	6200
Arsenic, XRF		222	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-41/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380255
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1353
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		107	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-41/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380256
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1550
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		46.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		2040	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-44/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380257
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1555
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		26.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		1220	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-44/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 380258
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1613
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		171	MG/KG	11/18/05	6200
Lead, XRF		1580	MG/KG	11/18/05	6200
Zinc, XRF		5790	MG/KG	11/18/05	6200
Arsenic, XRF		95.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-51/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380259
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1615
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		40.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		890	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-51/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380260
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1618
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		63.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-51/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380261
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1630
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		12.0	MG/KG	11/18/05	6200
Lead, XRF		372	MG/KG	11/18/05	6200
Zinc, XRF		1020	MG/KG	11/18/05	6200
Arsenic, XRF		22.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-52/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



ANALYST _____

*

Sample Number: 380262
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1635
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		84.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE


LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-52/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380263
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1640
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		64.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-52/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 380266
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1659
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		513	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-53/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 380267
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1705
Date Received: 08/05/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W3
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		60.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
SP-53/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample:Metals

Sample Number: 381328
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1055
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	11/18/05	6200
Lead, XRF		230	MG/KG	11/18/05	6200
Zinc, XRF		1190	MG/KG	11/18/05	6200
Arsenic, XRF		17.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381329
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1057
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		216	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381330
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1059
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/18/05	6200
Lead, XRF	<	20.0	MG/KG	11/18/05	6200
Zinc, XRF		57.0	MG/KG	11/18/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/18/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381332
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1110
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Zinc, XRF		170	MG/KG	11/23/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-04/SS05

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 381333
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1215
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		170	MG/KG	11/23/05	6200
Lead, XRF	>	5500	MG/KG	11/23/05	6200
Zinc, XRF	>	7000	MG/KG	11/23/05	6200
Arsenic, XRF	>	650	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-07/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381334
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1218
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		54.0	MG/KG	11/23/05	6200
Lead, XRF		1320	MG/KG	11/23/05	6200
Zinc, XRF		2180	MG/KG	11/23/05	6200
Arsenic, XRF		78.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-07/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381336
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1225
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Lead, XRF		33.0	MG/KG	11/23/05	6200
Zinc, XRF		197	MG/KG	11/23/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-07/SS04

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381337
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1230
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Lead, XRF		215	MG/KG	11/23/05	6200
Zinc, XRF		851	MG/KG	11/23/05	6200
Arsenic, XRF		16.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-07/SS05

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381338
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1218
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		53.0	MG/KG	11/23/05	6200
Lead, XRF		1340	MG/KG	11/23/05	6200
Zinc, XRF		2510	MG/KG	11/23/05	6200
Arsenic, XRF		74.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-1000/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 381339
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1433
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		128	MG/KG	11/23/05	6200
Lead, XRF		2630	MG/KG	11/23/05	6200
Zinc, XRF	>	7000	MG/KG	11/23/05	6200
Arsenic, XRF		174	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-09/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381340
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1435
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		166	MG/KG	11/23/05	6200
Lead, XRF		3290	MG/KG	11/23/05	6200
Zinc, XRF	>	7000	MG/KG	11/23/05	6200
Arsenic, XRF		251	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-09/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 381341
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1440
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		97.0	MG/KG	11/23/05	6200
Lead, XRF		387	MG/KG	11/23/05	6200
Zinc, XRF		5720	MG/KG	11/23/05	6200
Arsenic, XRF		30.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-09/SS04

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381342
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1446
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		12.0	MG/KG	11/23/05	6200
Lead, XRF		49.0	MG/KG	11/23/05	6200
Zinc, XRF		472	MG/KG	11/23/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PZ-1002/SS04

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381343
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1435
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Lead, XRF		21.0	MG/KG	11/23/05	6200
Zinc, XRF		99.0	MG/KG	11/23/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-06/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 381345
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1445
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/23/05	6200
Lead, XRF	<	20.0	MG/KG	11/23/05	6200
Zinc, XRF		35.0	MG/KG	11/23/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/23/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-01/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST

TFM-0002407

Sample Number: 381346
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1515
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF	<	20.0	MG/KG	11/30/05	6200
Zinc, XRF		154	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 381347
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1517
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF	<	20.0	MG/KG	11/30/05	6200
Zinc, XRF		50.0	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-02/SS02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST

Sample Number: 381348
Project Code: TF-SED
Agency Number:
Date Collected: 08/16/2005
Time Collected: 1520
Date Received: 08/19/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W4
Station:
Facility:
Collected By: BDS
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF	<	20.0	MG/KG	11/30/05	6200
Zinc, XRF		72.0	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-SP-02/SS03

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample:Metals

Sample Number: 382553
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2005
Time Collected: 1820
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		205	MG/KG	11/30/05	6200
Zinc, XRF		1150	MG/KG	11/30/05	6200
Arsenic, XRF		15.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-35/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382554
Project Code: TF-SED
Agency Number:
Date Collected: 08/25/2005
Time Collected: 0910
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	11/30/05	6200
Lead, XRF		217	MG/KG	11/30/05	6200
Zinc, XRF		1540	MG/KG	11/30/05	6200
Arsenic, XRF		17.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-33/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382555
Project Code: TF-SED
Agency Number:
Date Collected: 08/25/2005
Time Collected: 1015
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		88.0	MG/KG	11/30/05	6200
Zinc, XRF		368	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-07/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382556
Project Code: TF-SED
Agency Number:
Date Collected: 08/25/2005
Time Collected: 1630
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		102	MG/KG	11/30/05	6200
Zinc, XRF		353	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-08/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 382557
Project Code: TF-SED
Agency Number:
Date Collected: 08/25/2005
Time Collected: 1745
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		110	MG/KG	11/30/05	6200
Zinc, XRF		239	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-03/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

2007.2.9

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ANALYST _____

Sample Number: 382558
Project Code: TF-SED
Agency Number:
Date Collected: 08/26/2005
Time Collected: 1216
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		131	MG/KG	11/30/05	6200
Zinc, XRF		405	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-21/SS01; USE FOR LAB DUP

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382559
Project Code: TF-SED
Agency Number:
Date Collected: 08/26/2005
Time Collected: 1551
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		45.0	MG/KG	11/30/05	6200
Zinc, XRF		198	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL- 14/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



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ANALYST _____

Sample Number: 382560
Project Code: TF-SED
Agency Number:
Date Collected: 08/26/2005
Time Collected: 1641
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		82.0	MG/KG	11/30/05	6200
Zinc, XRF		670	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL- 34/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

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Sample Number: 382562
Project Code: TF-SED
Agency Number:
Date Collected: 08/27/2005
Time Collected: 1021
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF		106	MG/KG	11/30/05	6200
Zinc, XRF		201	MG/KG	11/30/05	6200
Arsenic, XRF		15.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL- 58/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382563
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2005
Time Collected: 0926
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	11/30/05	6200
Lead, XRF	<	20.0	MG/KG	11/30/05	6200
Zinc, XRF		106	MG/KG	11/30/05	6200
Arsenic, XRF	<	10.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL- 53/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382565
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1325
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		14.0	MG/KG	11/30/05	6200
Lead, XRF		424	MG/KG	11/30/05	6200
Zinc, XRF		1210	MG/KG	11/30/05	6200
Arsenic, XRF		33.0	MG/KG	11/30/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-05/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382566
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1353
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		145	MG/KG	12/01/05	6200
Zinc, XRF		504	MG/KG	12/01/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-25/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382568
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1453
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		342	MG/KG	12/01/05	6200
Zinc, XRF		915	MG/KG	12/01/05	6200
Arsenic, XRF		21.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-46/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 382570
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1510
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		188	MG/KG	12/01/05	6200
Zinc, XRF		739	MG/KG	12/01/05	6200
Arsenic, XRF		16.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-47/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382571
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1530
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		300	MG/KG	12/01/05	6200
Zinc, XRF		1540	MG/KG	12/01/05	6200
Arsenic, XRF		31.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-41/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

TFM-0002428

Sample Number: 382574
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1720
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		280	MG/KG	12/01/05	6200
Zinc, XRF		199	MG/KG	12/01/05	6200
Arsenic, XRF		17.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-68/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382576
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1530
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		297	MG/KG	12/01/05	6200
Zinc, XRF		1830	MG/KG	12/01/05	6200
Arsenic, XRF		27.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1003/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382577
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1353
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		137	MG/KG	12/01/05	6200
Zinc, XRF		492	MG/KG	12/01/05	6200
Arsenic, XRF		11.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1004/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382578
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2005
Time Collected: 1132
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		191	MG/KG	12/01/05	6200
Zinc, XRF		513	MG/KG	12/01/05	6200
Arsenic, XRF		14.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-19/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382579
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 0950
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		409	MG/KG	12/01/05	6200
Zinc, XRF		6590	MG/KG	12/01/05	6200
Arsenic, XRF		27.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-96/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 382580
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1005
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		199	MG/KG	12/01/05	6200
Zinc, XRF		474	MG/KG	12/01/05	6200
Arsenic, XRF		13.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-97A/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382581
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1016
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/01/05	6200
Lead, XRF		383	MG/KG	12/01/05	6200
Zinc, XRF		656	MG/KG	12/01/05	6200
Arsenic, XRF		25.0	MG/KG	12/01/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-97B/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382582
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1043
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF		303	MG/KG	12/07/05	6200
Zinc, XRF		1160	MG/KG	12/07/05	6200
Arsenic, XRF		21.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-03/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 382583
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1055
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF		32.0	MG/KG	12/07/05	6200
Zinc, XRF		207	MG/KG	12/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-04/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:



*

ANALYST _____

Sample Number: 382585
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1135
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF	<	20.0	MG/KG	12/07/05	6200
Zinc, XRF	<	50.0	MG/KG	12/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-06/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 382586
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1200
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF		82.0	MG/KG	12/07/05	6200
Zinc, XRF		348	MG/KG	12/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-29/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382587
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1219
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF		286	MG/KG	12/07/05	6200
Zinc, XRF		988	MG/KG	12/07/05	6200
Arsenic, XRF		17.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MAUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-94/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*
ANALYST _____

Sample Number: 382588
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1225
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/07/05	6200
Lead, XRF		62.0	MG/KG	12/07/05	6200
Zinc, XRF		220	MG/KG	12/07/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/07/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-94DW/GRAB

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382589
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1235
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		237	MG/KG	12/08/05	6200
Zinc, XRF		879	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-04/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382590
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1337
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		352	MG/KG	12/08/05	6200
Zinc, XRF		2000	MG/KG	12/08/05	6200
Arsenic, XRF		27.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-27/SS01; USE FOR LAB DUP

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample: Metals

Sample Number: 382591
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1400
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		33.0	MG/KG	12/08/05	6200
Zinc, XRF		126	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-98/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382592
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1421
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		100	MG/KG	12/08/05	6200
Zinc, XRF		356	MG/KG	12/08/05	6200
Arsenic, XRF		12.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-73/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382593
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1500
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		112	MG/KG	12/08/05	6200
Zinc, XRF		218	MG/KG	12/08/05	6200
Arsenic, XRF		20.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-59/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 382594
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1510
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		65.0	MG/KG	12/08/05	6200
Zinc, XRF		233	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-61/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 382595
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1535
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		406	MG/KG	12/08/05	6200
Zinc, XRF		1500	MG/KG	12/08/05	6200
Arsenic, XRF		29.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-09/SS01; USE FOR LAB DUP

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382596
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1600
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		546	MG/KG	12/08/05	6200
Zinc, XRF		2020	MG/KG	12/08/05	6200
Arsenic, XRF		39.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-08/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

Sample Number: 382597
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1610
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		41.0	MG/KG	12/08/05	6200
Lead, XRF	>	5500	MG/KG	12/08/05	6200
Zinc, XRF	>	7000	MG/KG	12/08/05	6200
Arsenic, XRF	>	650	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-09DW/GRAB

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382598
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1643
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		70.0	MG/KG	12/08/05	6200
Zinc, XRF		232	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382599
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1700
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF	<	20.0	MG/KG	12/08/05	6200
Zinc, XRF		142	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-01/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382600
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1713
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF		27.0	MG/KG	12/08/05	6200
Zinc, XRF		199	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 382602
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1735
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/08/05	6200
Lead, XRF	<	20.0	MG/KG	12/08/05	6200
Zinc, XRF		77.0	MG/KG	12/08/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/08/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-95/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382604
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1421
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		128	MG/KG	12/09/05	6200
Zinc, XRF		429	MG/KG	12/09/05	6200
Arsenic, XRF		17.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-1005/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382606
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1605
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		133	MG/KG	12/09/05	6200
Zinc, XRF		742	MG/KG	12/09/05	6200
Arsenic, XRF		10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-99/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382607
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1545
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	12/09/05	6200
Lead, XRF		310	MG/KG	12/09/05	6200
Zinc, XRF		1330	MG/KG	12/09/05	6200
Arsenic, XRF		21.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-31/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 382608
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1355
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		29.0	MG/KG	12/09/05	6200
Zinc, XRF		188	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-55/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

* ANALYST _____

Sample Number: 382609
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1250
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		50.0	MG/KG	12/09/05	6200
Zinc, XRF		218	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-64/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 382611
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1100
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		185	MG/KG	12/09/05	6200
Zinc, XRF		431	MG/KG	12/09/05	6200
Arsenic, XRF		12.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-07/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382612
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1234
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		31.0	MG/KG	12/09/05	6200
Zinc, XRF		184	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-65/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382613
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1515
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		129	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-67/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 382614
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1450
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY

OKLAHOMA, 73101-1677
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		41.0	MG/KG	12/09/05	6200
Zinc, XRF		182	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-66/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382615
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1006
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		12.0	MG/KG	12/09/05	6200
Lead, XRF		571	MG/KG	12/09/05	6200
Zinc, XRF		1550	MG/KG	12/09/05	6200
Arsenic, XRF		37.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-49/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382616
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1050
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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OKLAHOMA, 73101-1677
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		214	MG/KG	12/09/05	6200
Zinc, XRF		764	MG/KG	12/09/05	6200
Arsenic, XRF		14.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TSL-06/SS01; USE FOR LAB DUP

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382617
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1315
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		74.0	MG/KG	12/09/05	6200
Zinc, XRF		287	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-63/SS01; USE FOR LAB DUP

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 382618
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1426
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		26.0	MG/KG	12/09/05	6200
Zinc, XRF		134	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-56/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST 

*

Sample Number: 382620
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0822
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF		10.0	MG/KG	12/09/05	6200
Lead, XRF		514	MG/KG	12/09/05	6200
Zinc, XRF		1340	MG/KG	12/09/05	6200
Arsenic, XRF		25.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-36/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382621
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1018
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		118	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-48/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382622
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1330
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		23.0	MG/KG	12/09/05	6200
Zinc, XRF		148	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-54/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST _____

Sample Number: 382624
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0848
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		167	MG/KG	12/09/05	6200
Zinc, XRF		678	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

OSL-38/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382625
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0858
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		113	MG/KG	12/09/05	6200
Zinc, XRF		490	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC

PROGRAM:

COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:

/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:

TRB-01/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 382626
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0910
Date Received: 09/09/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W5
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF		179	MG/KG	12/09/05	6200
Zinc, XRF		744	MG/KG	12/09/05	6200
Arsenic, XRF		12.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OSL-37/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST _____

Sample Number: 383117
Project Code: TF-SED
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1506
Date Received: 09/14/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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OKLAHOMA CITY

OKLAHOMA, 73101-1677

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		107	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-OSL-02/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 383118
Project Code: TF-SED
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1553
Date Received: 09/14/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		71.0	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
TRB-11/SS01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 383119
Project Code: TF-SED
Agency Number:
Date Collected: 09/13/2005
Time Collected: 1459
Date Received: 09/14/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W-6
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		180	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-OFF-02/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 384385
Project Code: TF-SED
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1038
Date Received: 09/30/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73101-1677

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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		50.0	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-OFF-01/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*
ANALYST 

Sample Number: 384386
Project Code: TF-SED
Agency Number:
Date Collected: 09/29/2005
Time Collected: 1038
Date Received: 09/30/2005
Date Completed: 01/09/2006
PWS Id:
Location Code: W-7
Station:
Facility:
Collected By: DSB
Report Date: 01/09/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73101-1677
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Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Cadmium, XRF	<	10.0	MG/KG	12/09/05	6200
Lead, XRF	<	20.0	MG/KG	12/09/05	6200
Zinc, XRF		52.0	MG/KG	12/09/05	6200
Arsenic, XRF	<	10.0	MG/KG	12/09/05	6200

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
BG-OFF-1000/SD01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs Analyzing this Sample: Metals

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 378867 – 378883**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 1
SEL Sample Range: 378867 to 378883
Date of Analysis: 10/31/2005
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	555	88.7
Cadmium	21.8	20.3	93.1
Lead	5532	5700	103.0
Zinc	6952	6500	93.5

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	101	96.2
Cadmium	41.7	38.4	92.1
Lead	1162	1200	103.3
Zinc	350.4	345	98.5

% Recovery
Limits¹

Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 1
SEL Sample Range: 378867 to 378883
Date of Analysis: 10/31/2005
Concentration Units: mg/kg

SEL Sample # 378882

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	168	198	16.4
Cadmium	>1000	>1000	
Lead	2300	2670	14.9
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 1
SEL Sample Range: 378867 to 378883
Date of Analysis: 10/31/2005
Concentration Units: mg/kg

SEL Sample # 378883

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	187	183	2.2
Cadmium	>1000	>1000	
Lead	2400	2400	
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 378884 – 378899**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 2
 SEL Sample Range: 378884 to 378899
 Date of Analysis: 11/1/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	557	89.0
Cadmium	21.8	22	100.9
Lead	5532	5770	104.3
Zinc	6952	6660	95.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	102	97.1
Cadmium	41.7	38	91.1
Lead	1162	1170	100.7
Zinc	350.4	341	97.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378884

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	195	176	10.2
Cadmium	>1000	>1000	
Lead	2740	2160	23.7
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378897

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	277	242	13.5
Cadmium	975	891	9.0
Lead	3940	3620	8.5
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378898

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	267	236	12.3
Cadmium	891	952	6.6
Lead	3930	3630	7.9
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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TFM-0002488

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378899

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	238	246	3.3
Cadmium	700	628	10.8
Lead	3670	3550	3.3
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 378900 – 379570**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 3
 SEL Sample Range: 378900 to 379570
 Date of Analysis: 11/1/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	550	87.9
Cadmium	21.8	21	96.3
Lead	5532	5910	106.8
Zinc	6952	6530	93.9

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	102	97.1
Cadmium	41.7	41	98.3
Lead	1162	1230	105.9
Zinc	350.4	347	99.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379571 – 379586**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 4
 SEL Sample Range: 379571 to 379586
 Date of Analysis: 11/2/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	557	89.0
Cadmium	21.8	20	91.7
Lead	5532	5820	105.2
Zinc	6952	6690	96.2

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	42	100.7
Lead	1162	1170	100.7
Zinc	350.4	355	101.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 4
SEL Sample Range: 379571 to 379586
Date of Analysis: 11/2/2005
Concentration Units: mg/kg

SEL Sample # 379571

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	328	364	10.4
Cadmium	114	140	20.5
Lead	5280	5790	9.2
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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TFM-0002494

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379587 – 379602**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 5
 SEL Sample Range: 379587 to 379602
 Date of Analysis: 11/2/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	552	88.2
Cadmium	21.8	25	114.7
Lead	5532	5850	105.7
Zinc	6952	6590	94.8

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	42	100.7
Lead	1162	1220	105.0
Zinc	350.4	346	98.7

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 5
SEL Sample Range: 379587 to 379602
Date of Analysis: 11/2/2005
Concentration Units: mg/kg

SEL Sample # 379600

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	85	62	31.3

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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TFM-0002497

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379603 – 380106**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 6
 SEL Sample Range: 379603 to 380106
 Date of Analysis: 11/4/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	542	86.6
Cadmium	21.8	23	105.5
Lead	5532	5760	104.1
Zinc	6952	6610	95.1

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	41	98.3
Lead	1162	1180	101.5
Zinc	350.4	347	99.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 6
SEL Sample Range: 379603 to 380106
Date of Analysis: 11/4/2005
Concentration Units: mg/kg

SEL Sample # 380099

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	179	243	30.3
Cadmium	97	116	17.8
Lead	2700	3660	30.2
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²
Laboratory: 25%
Project DQIs: <35%

COMMENT:

<p>Sample was redried, reprepared and reanalyzed to confirm original results. Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000</p>	<p>XRF</p>
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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 6
 SEL Sample Range: 379603 to 380106
 Date of Analysis: 11/4/2005
 Concentration Units: mg/kg

SEL Sample # 380103

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	4.3
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	69	72	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380107 – 380122**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 7
 SEL Sample Range: 380107 to 380122
 Date of Analysis: 11/3/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	565	90.3
Cadmium	21.8	25	114.7
Lead	5532	5790	104.7
Zinc	6952	6580	94.6

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	98	93.3
Cadmium	41.7	36	86.3
Lead	1162	1210	104.1
Zinc	350.4	349	99.6

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 7
SEL Sample Range: 380107 to 380122
Date of Analysis: 11/3/2005
Concentration Units: mg/kg

SEL Sample # 380117

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	132	128	
			3.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380123 – 380138**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 8
 SEL Sample Range: 380123 to 380138
 Date of Analysis: 11/4/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	551	88.0
Cadmium	21.8	24	110.1
Lead	5532	5820	105.2
Zinc	6952	6630	95.4

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	40	95.9
Lead	1162	1180	101.5
Zinc	350.4	356	101.6

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 8
SEL Sample Range: 380123 to 380138
Date of Analysis: 11/4/2005
Concentration Units: mg/kg

SEL Sample # 380137

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	79	68	15.0

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380139 – 380155**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 9
 SEL Sample Range: 380139 to 380155
 Date of Analysis: 11/7/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	18	82.6
Lead	5532	5840	105.6
Zinc	6952	6540	94.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	98	93.3
Cadmium	41.7	41	98.3
Lead	1162	1230	105.9
Zinc	350.4	355	101.3

% Recovery
Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380156 – 380170**

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

LABORATORY CONTROL SAMPLES

6200 XRF ANALYSIS

Batch ID: 10

SEL Sample Range: 380156 to 380170

Date of Analysis: 11/7/2005

Concentration Units: mg/kg

NIST Sources: Level 1 2710

Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	26	119.3
Lead	5532	5900	106.7
Zinc	6952	6680	96.1

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	42	100.7
Lead	1162	1230	105.9
Zinc	350.4	348	99.3

% Recovery
Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 10
SEL Sample Range: 380156 380170
Date of Analysis: 11/7/2005
Concentration Units: mg/kg

SEL Sample # 380156

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	14	13	7.4
Lead	48	48	0.0
Zinc	864	990	13.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 10
 SEL Sample Range: 380156 to 380170
 Date of Analysis: 11/7/2005
 Concentration Units: mg/kg

SEL Sample # 380160

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	76	59	25.2
Cadmium	55	50	9.5
Lead	1250	934	28.9
Zinc	5470	5230	4.5

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380171 – 380187**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 11
 SEL Sample Range: 380171 to 380187
 Date of Analysis: 11/8/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	557	89.0
Cadmium	21.8	19	87.2
Lead	5532	5780	104.5
Zinc	6952	6660	95.8

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	40	95.9
Lead	1162	1210	104.1
Zinc	350.4	354	101.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380188 – 380204**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 12
 SEL Sample Range: 380188 to 380204
 Date of Analysis: 11/9/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	568	90.7
Cadmium	21.8	26	119.3
Lead	5532	5880	106.3
Zinc	6952	6750	97.1

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	95	90.5
Cadmium	41.7	38	91.1
Lead	1162	1230	105.9
Zinc	350.4	338	96.5

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380205 – 380220**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 13
 SEL Sample Range: 380205 to 380220
 Date of Analysis: 11/15/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	565	90.3
Cadmium	21.8	21	96.3
Lead	5532	5880	106.3
Zinc	6952	6590	94.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	102	97.1
Cadmium	41.7	42	100.7
Lead	1162	1240	106.7
Zinc	350.4	350	99.9

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 13
SEL Sample Range: 380205 to 380220
Date of Analysis: 11/15/2005
Concentration Units: mg/kg

SEL Sample # 380205

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	<50	<50	0.0

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380221 – 380237**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 14
 SEL Sample Range: 380221 to 380237
 Date of Analysis: 11/17/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	20	91.7
Lead	5532	5790	104.7
Zinc	6952	6670	95.9

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	38	91.1
Lead	1162	1240	106.7
Zinc	350.4	347	99.0

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380238 – 380253**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 15
 SEL Sample Range: 380238 to 380253
 Date of Analysis: 11/18/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	574	91.7
Cadmium	21.8	20	91.7
Lead	5532	5740	103.8
Zinc	6952	6650	95.7

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	104	99.0
Cadmium	41.7	46	110.3
Lead	1162	1200	103.3
Zinc	350.4	367	104.7

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 15
SEL Sample Range: 380238 to 380253
Date of Analysis: 11/18/2005
Concentration Units: mg/kg

SEL Sample # 380251

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	13	10	26.1
Cadmium	<10	<10	0.0
Lead	211	197	6.9
Zinc	888	835	6.2

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380254 – 381330**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 16
 SEL Sample Range: 380254 to 381330
 Date of Analysis: 11/18/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	21	96.3
Lead	5532	5770	104.3
Zinc	6952	6580	94.6

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	43	103.1
Lead	1162	1230	105.9
Zinc	350.4	353	100.7

% Recovery
Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 381331 – 381345**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 17
 SEL Sample Range: 381331 to 381345
 Date of Analysis: 11/23/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	547	87.4
Cadmium	21.8	19	87.2
Lead	5532	5860	105.9
Zinc	6952	6630	95.4

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	104	99.0
Cadmium	41.7	38	91.1
Lead	1162	1190	102.4
Zinc	350.4	352	100.5

% Recovery
Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 17
SEL Sample Range: 381331 to 381345
Date of Analysis: 11/23/2005
Concentration Units: mg/kg

SEL Sample # 381331

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	84	78	7.4

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 17
SEL Sample Range: 381331 to 381345
Date of Analysis: 11/23/2005
Concentration Units: mg/kg

SEL Sample # 381344

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	64	59	8.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 381346 – 382565**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 18
 SEL Sample Range: 381346 to 382565
 Date of Analysis: 11/30/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	566	90.4
Cadmium	21.8	19	87.2
Lead	5532	5910	106.8
Zinc	6952	6680	96.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	97	92.4
Cadmium	41.7	43	103.1
Lead	1162	1130	97.2
Zinc	350.4	350	99.9

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 18
SEL Sample Range: 381346 to 382565
Date of Analysis: 11/30/2005
Concentration Units: mg/kg

SEL Sample # 382558

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	131	112	15.6
Zinc	405	420	3.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

No duplicate jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382566 – 382581**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 19
 SEL Sample Range: 382566 to 382581
 Date of Analysis: 12/1/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	562	89.8
Cadmium	21.8	21	96.3
Lead	5532	5910	106.8
Zinc	6952	6710	96.5

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	42	100.7
Lead	1162	1230	105.9
Zinc	350.4	354	101.0

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 19
SEL Sample Range: 382566 to 382581
Date of Analysis: 12/1/2005
Concentration Units: mg/kg

SEL Sample # 382573

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	16.2	16.2	0.0
Cadmium	<10	<10	0.0
Lead	227	218	4.0
Zinc	764	788	3.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382582 – 382588**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 20
 SEL Sample Range: 382582 to 382588
 Date of Analysis: 12/7/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	558	89.1
Cadmium	21.8	23	105.5
Lead	5532	5860	105.9
Zinc	6952	6710	96.5

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	38	91.1
Lead	1162	1200	103.3
Zinc	350.4	350	99.9

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382589 – 382603**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 21
 SEL Sample Range: 382589 to 382603
 Date of Analysis: 12/8/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	570	91.1
Cadmium	21.8	19	87.2
Lead	5532	5980	108.1
Zinc	6952	6740	97.0

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	44	105.5
Lead	1162	1200	103.3
Zinc	350.4	362	103.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 21
SEL Sample Range: 382589 to 382603
Date of Analysis: 12/8/2005
Concentration Units: mg/kg

SEL Sample # 382590

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	27	24	11.8
Cadmium	<10	<10	
Lead	353	312	12.3
Zinc	2000	1610	21.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD

Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

No duplicate jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 21
SEL Sample Range: 382589 to 382603
Date of Analysis: 12/8/2005
Concentration Units: mg/kg

SEL Sample # 382595

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	29	30	3.4
Cadmium	10	10	0.0
Lead	406	419	3.2
Zinc	1500	1830	19.8

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382604 – 382628**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 22
 SEL Sample Range: 382604 to 382628
 Date of Analysis: 12/9/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	568	90.7
Cadmium	21.8	21	96.3
Lead	5532	5900	106.7
Zinc	6952	6790	97.7

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	43	103.1
Lead	1162	1240	106.7
Zinc	350.4	355	101.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 22
SEL Sample Range: 382604 to 382628
Date of Analysis: 12/9/2005
Concentration Units: mg/kg

SEL Sample # 382616

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	14	15	6.9
Cadmium	<10	<10	
Lead	214	245	13.5
Zinc	764	786	2.8

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

duplicate sample jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 22
SEL Sample Range: 382604 to 382628
Date of Analysis: 12/9/2005
Concentration Units: mg/kg

SEL Sample # 382617

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	10	11	9.5
Cadmium	<10	<10	
Lead	74	98	27.9
Zinc	287	351	20.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

duplicate sample jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382629 – 384396**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 23
 SEL Sample Range: 382629 to 384396
 Date of Analysis: 12/9/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	23	105.5
Lead	5532	603	10.9
Zinc	6952	6770	97.4

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	37	88.7
Lead	1162	1210	104.1
Zinc	350.4	362	103.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378898

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	267	236	12.3
Cadmium	891	952	6.6
Lead	3930	3630	7.9
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 2
SEL Sample Range: 378884 to 378899
Date of Analysis: 11/1/2005
Concentration Units: mg/kg

SEL Sample # 378899

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	238	246	3.3
Cadmium	700	628	10.8
Lead	3670	3550	3.3
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 378900 – 379570**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 3
 SEL Sample Range: 378900 to 379570
 Date of Analysis: 11/1/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	550	87.9
Cadmium	21.8	21	96.3
Lead	5532	5910	106.8
Zinc	6952	6530	93.9

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	102	97.1
Cadmium	41.7	41	98.3
Lead	1162	1230	105.9
Zinc	350.4	347	99.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379571 – 379586**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 4
 SEL Sample Range: 379571 to 379586
 Date of Analysis: 11/2/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	557	89.0
Cadmium	21.8	20	91.7
Lead	5532	5820	105.2
Zinc	6952	6690	96.2

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	42	100.7
Lead	1162	1170	100.7
Zinc	350.4	355	101.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 4
SEL Sample Range: 379571 to 379586
Date of Analysis: 11/2/2005
Concentration Units: mg/kg

SEL Sample # 379571

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	328	364	10.4
Cadmium	114	140	20.5
Lead	5280	5790	9.2
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379587 – 379602**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 5
 SEL Sample Range: 379587 to 379602
 Date of Analysis: 11/2/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	552	88.2
Cadmium	21.8	25	114.7
Lead	5532	5850	105.7
Zinc	6952	6590	94.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	42	100.7
Lead	1162	1220	105.0
Zinc	350.4	346	98.7

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 5
SEL Sample Range: 379587 to 379602
Date of Analysis: 11/2/2005
Concentration Units: mg/kg

SEL Sample # 379600

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	85	62	31.3

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 379603 – 380106**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 6
 SEL Sample Range: 379603 to 380106
 Date of Analysis: 11/4/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	542	86.6
Cadmium	21.8	23	105.5
Lead	5532	5760	104.1
Zinc	6952	6610	95.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	41	98.3
Lead	1162	1180	101.5
Zinc	350.4	347	99.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 6
SEL Sample Range: 379603 to 380106
Date of Analysis: 11/4/2005
Concentration Units: mg/kg

SEL Sample # 380099

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	179	243	30.3
Cadmium	97	116	17.8
Lead	2700	3660	30.2
Zinc	>7000	>7000	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²
Laboratory: 25%
Project DQIs: <35%

COMMENT:

Sample was redried, reprepared and reanalyzed to confirm original results.
Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

XRF

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 6
SEL Sample Range: 379603 to 380106
Date of Analysis: 11/4/2005
Concentration Units: mg/kg

SEL Sample # 380103

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	69	72	4.3

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380107 – 380122**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 7
 SEL Sample Range: 380107 to 380122
 Date of Analysis: 11/3/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	565	90.3
Cadmium	21.8	25	114.7
Lead	5532	5790	104.7
Zinc	6952	6580	94.6

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	98	93.3
Cadmium	41.7	36	86.3
Lead	1162	1210	104.1
Zinc	350.4	349	99.6

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 7
SEL Sample Range: 380107 to 380122
Date of Analysis: 11/3/2005
Concentration Units: mg/kg

SEL Sample # 380117

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	132	128	
			3.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380123 – 380138**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 8
 SEL Sample Range: 380123 to 380138
 Date of Analysis: 11/4/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	551	88.0
Cadmium	21.8	24	110.1
Lead	5532	5820	105.2
Zinc	6952	6630	95.4

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	40	95.9
Lead	1162	1180	101.5
Zinc	350.4	356	101.6

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 8
SEL Sample Range: 380123 to 380138
Date of Analysis: 11/4/2005
Concentration Units: mg/kg

SEL Sample # 380137

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	15.0
Cadmium	<10	<10	
Lead	<20	<20	
Zinc	79	68	

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380139 – 380155**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 9
 SEL Sample Range: 380139 to 380155
 Date of Analysis: 11/7/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	18	82.6
Lead	5532	5840	105.6
Zinc	6952	6540	94.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	98	93.3
Cadmium	41.7	41	98.3
Lead	1162	1230	105.9
Zinc	350.4	355	101.3

% Recovery
Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380156 – 380170**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 10
 SEL Sample Range: 380156 to 380170
 Date of Analysis: 11/7/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	26	119.3
Lead	5532	5900	106.7
Zinc	6952	6680	96.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	100	95.2
Cadmium	41.7	42	100.7
Lead	1162	1230	105.9
Zinc	350.4	348	99.3

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 10
 SEL Sample Range: 380156 380170
 Date of Analysis: 11/7/2005
 Concentration Units: mg/kg

SEL Sample # 380156

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	
Cadmium	14	13	7.4
Lead	48	48	0.0
Zinc	864	990	13.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 10
SEL Sample Range: 380156 to 380170
Date of Analysis: 11/7/2005
Concentration Units: mg/kg

SEL Sample # 380160

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	76	59	25.2
Cadmium	55	50	9.5
Lead	1250	934	28.9
Zinc	5470	5230	4.5

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380171 – 380187**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 11
 SEL Sample Range: 380171 to 380187
 Date of Analysis: 11/8/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	557	89.0
Cadmium	21.8	19	87.2
Lead	5532	5780	104.5
Zinc	6952	6660	95.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	40	95.9
Lead	1162	1210	104.1
Zinc	350.4	354	101.0

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380188 – 380204**

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

LABORATORY CONTROL SAMPLES

6200 XRF ANALYSIS

Batch ID: 12

SEL Sample Range: 380188 to 380204

Date of Analysis: 11/9/2005

Concentration Units: mg/kg

NIST Sources: Level 1 2710

Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R [†]
Arsenic	626	568	90.7
Cadmium	21.8	26	119.3
Lead	5532	5880	106.3
Zinc	6952	6750	97.1

Analyte	Level 2 Conc.	Measured	
		Result	%R [†]
Arsenic	105	95	90.5
Cadmium	41.7	38	91.1
Lead	1162	1230	105.9
Zinc	350.4	338	96.5

% Recovery
Limits[†]

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380205 – 380220**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 13
 SEL Sample Range: 380205 to 380220
 Date of Analysis: 11/15/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	565	90.3
Cadmium	21.8	21	96.3
Lead	5532	5880	106.3
Zinc	6952	6590	94.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	102	97.1
Cadmium	41.7	42	100.7
Lead	1162	1240	106.7
Zinc	350.4	350	99.9

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 13
 SEL Sample Range: 380205 to 380220
 Date of Analysis: 11/15/2005
 Concentration Units: mg/kg

SEL Sample # 380205

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	<50	<50	0.0

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380221 – 380237**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 14
 SEL Sample Range: 380221 to 380237
 Date of Analysis: 11/17/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	20	91.7
Lead	5532	5790	104.7
Zinc	6952	6670	95.9

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	38	91.1
Lead	1162	1240	106.7
Zinc	350.4	347	99.0

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380238 – 380253**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 15
SEL Sample Range: 380238 to 380253
Date of Analysis: 11/18/2005
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	574	91.7
Cadmium	21.8	20	91.7
Lead	5532	5740	103.8
Zinc	6952	6650	95.7

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	104	99.0
Cadmium	41.7	46	110.3
Lead	1162	1200	103.3
Zinc	350.4	367	104.7

% Recovery
Limits¹
Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 15
SEL Sample Range: 380238 to 380253
Date of Analysis: 11/18/2005
Concentration Units: mg/kg

SEL Sample # 380251

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	13	10	26.1
Cadmium	<10	<10	0.0
Lead	211	197	6.9
Zinc	888	835	6.2

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 380254 – 381330**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 16
 SEL Sample Range: 380254 to 381330
 Date of Analysis: 11/18/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	21	96.3
Lead	5532	5770	104.3
Zinc	6952	6580	94.6

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	43	103.1
Lead	1162	1230	105.9
Zinc	350.4	353	100.7

% Recovery
 Limits¹
 Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 381331 – 381345**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 17
 SEL Sample Range: 381331 to 381345
 Date of Analysis: 11/23/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	547	87.4
Cadmium	21.8	19	87.2
Lead	5532	5860	105.9
Zinc	6952	6630	95.4

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	104	99.0
Cadmium	41.7	38	91.1
Lead	1162	1190	102.4
Zinc	350.4	352	100.5

% Recovery
Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 17
SEL Sample Range: 381331 to 381345
Date of Analysis: 11/23/2005
Concentration Units: mg/kg

SEL Sample # 381331

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	84	78	7.4

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 17
SEL Sample Range: 381331 to 381345
Date of Analysis: 11/23/2005
Concentration Units: mg/kg

SEL Sample # 381344

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	<20	<20	0.0
Zinc	64	59	8.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 381346 – 382565**

STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES

6200 XRF ANALYSIS

Batch ID: 18
SEL Sample Range: 381346 to 382565
Date of Analysis: 11/30/2005
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	566	90.4
Cadmium	21.8	19	87.2
Lead	5532	5910	106.8
Zinc	6952	6680	96.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	97	92.4
Cadmium	41.7	43	103.1
Lead	1162	1130	97.2
Zinc	350.4	350	99.9

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 18
SEL Sample Range: 381346 to 382565
Date of Analysis: 11/30/2005
Concentration Units: mg/kg

SEL Sample # 382558

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	131	112	15.6
Zinc	405	420	3.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

No duplicate jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382566 – 382581**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 19
 SEL Sample Range: 382566 to 382581
 Date of Analysis: 12/1/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	562	89.8
Cadmium	21.8	21	96.3
Lead	5532	5910	106.8
Zinc	6952	6710	96.5

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	42	100.7
Lead	1162	1230	105.9
Zinc	350.4	354	101.0

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 19
SEL Sample Range: 382566 to 382581
Date of Analysis: 12/1/2005
Concentration Units: mg/kg

SEL Sample # 382573

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	16.2	16.2	0.0
Cadmium	<10	<10	0.0
Lead	227	218	4.0
Zinc	764	788	3.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

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Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382582 – 382588**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 20
 SEL Sample Range: 382582 to 382588
 Date of Analysis: 12/7/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	558	89.1
Cadmium	21.8	23	105.5
Lead	5532	5860	105.9
Zinc	6952	6710	96.5

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	38	91.1
Lead	1162	1200	103.3
Zinc	350.4	350	99.9

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382589 – 382603**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 21
 SEL Sample Range: 382589 to 382603
 Date of Analysis: 12/8/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	570	91.1
Cadmium	21.8	19	87.2
Lead	5532	5980	108.1
Zinc	6952	6740	97.0

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	44	105.5
Lead	1162	1200	103.3
Zinc	350.4	362	103.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 21
SEL Sample Range: 382589 to 382603
Date of Analysis: 12/8/2005
Concentration Units: mg/kg

SEL Sample # 382590

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	27	24	11.8
Cadmium	<10	<10	
Lead	353	312	12.3
Zinc	2000	1610	21.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

No duplicate jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 21
SEL Sample Range: 382589 to 382603
Date of Analysis: 12/8/2005
Concentration Units: mg/kg

SEL Sample # 382595

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	29	30	3.4
Cadmium	10	10	0.0
Lead	406	419	3.2
Zinc	1500	1830	19.8

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD

Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000
--

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382604 – 382628**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 22
 SEL Sample Range: 382604 to 382628
 Date of Analysis: 12/9/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	568	90.7
Cadmium	21.8	21	96.3
Lead	5532	5900	106.7
Zinc	6952	6790	97.7

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	43	103.1
Lead	1162	1240	106.7
Zinc	350.4	355	101.3

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 22
SEL Sample Range: 382604 to 382628
Date of Analysis: 12/9/2005
Concentration Units: mg/kg

SEL Sample # 382616

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	14	15	6.9
Cadmium	<10	<10	
Lead	214	245	13.5
Zinc	764	786	2.8

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

duplicate sample jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7

Form 5 Rev. 07/01/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: 22
SEL Sample Range: 382604 to 382628
Date of Analysis: 12/9/2005
Concentration Units: mg/kg

SEL Sample # 382617

Analyte	Sample	Matrix	RPD
	Conc.	Duplicate	
Arsenic	10	11	9.5
Cadmium	<10	<10	
Lead	74	98	27.9
Zinc	287	351	20.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

duplicate sample jar available. XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF QC Data

**QC Information Applicable to:
Lab IDs 382629 – 384396**

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 23
 SEL Sample Range: 382629 to 384396
 Date of Analysis: 12/9/2005
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	559	89.3
Cadmium	21.8	23	105.5
Lead	5532	603	10.9
Zinc	6952	6770	97.4

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99	94.3
Cadmium	41.7	37	88.7
Lead	1162	1210	104.1
Zinc	350.4	362	103.3

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

**STL Burlington
RI Phase I**

**Air Sampler Information
SDG 109536**

Air Sampler Information

TFM RI Phase I

TSP Sampler Information

Location AQ-01

08/24/2005 – 08/30/2005

Burns & McDonnell
TSP Sampler Calibration
(Dickson recorder)

SITE

Location: TFM Collinsville, OK Date: 8/24/2005
 Sampler: TE-5000 at AQ-01 Tech: DMC

CONDITIONS

Sampler Elevation (feet):	670		
Sea Level Pressure (in Hg):	29.24	Corrected Pressure (mm Hg):	726
Temperature (deg F):	79	Temperature (deg K):	299
Seasonal SL Press. (in Hg):	29.24	Corrected Seasonal (mm Hg):	726
Seasonal Temp. (deg F):	79	Seasonal Temp. (deg K):	299

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	1.98661
Model:	201780	Qstd Intercept:	-0.04216
Serial#:	128M	Date Certified:	3/21/2005

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	10.60	1.620	53.0	51.69	Slope = 32.0970
2	8.50	1.453	47.0	45.84	Intercept = -0.4608
3	6.70	1.292	42.0	40.96	Corr. coeff. = 0.9995
4	4.25	1.033	34.0	33.16	
5	2.80	0.843	27.0	26.33	# of Observations: 5

Calculations

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/24/05	Make---->	Tisch
Location->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-01	Serial--->	128M
Type---->	TSP/Lead	Slope---->	1.98661
Elevation>	670	Intercept>	-0.04216
Slope---->	32.0970	Certified>	03/21/05
Intercept>	-0.4608		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	79	Ta (deg K)	299
Sea Level Press ("Hg)	29.24	Pa (mm Hg)	726

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.29	42.0	1.29	-0.11	
With Filter Only		44.8	1.38		1.38

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

<u>Sampler</u>	<u>Calibrator</u>
Date----> 08/25/05	Make----> Tisch
Location--> TFM Collinsville, OK	Model----> 201780.00
Sampler--> TE-5000 at AQ-01	Serial---> 128M
Type-----> TSP/Lead	Slope----> 1.98661
Elevation> 670	Intercept> -0.04216
Slope----> 32.0970	Certified> 03/21/05
Intercept> -0.4608	
Calibrated> 08/24/05	

Conditions

Temp (deg F) 92	Ta (deg K) 306
Sea Level Press ("Hg 29.29	Pa (mm Hg) 727

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.28	42.0	1.28	-0.12	
With Filter Only		44.4	1.35		1.35

Is the percent difference <= +/-7%? ☒ yes ☐ no

Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/26/05	Make---->	Tisch
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-01	Serial--->	128M
Type---->	TSP/Lead	Slope---->	1.98661
Elevation>	670	Intercept>	-0.04216
Slope---->	32.0970	Certified>	03/21/05
Intercept>	-0.4608		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.18	Pa (mm Hg)	724

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.28	42.0	1.28	-0.11	
With Filter Only		44.6	1.36		1.36

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

<u>Sampler</u>	<u>Calibrator</u>
Date----> 08/27/05	Make----> Tisch
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> TE-5000 at AQ-01	Serial---> 128M
Type----> TSP/Lead	Slope----> 1.98661
Elevation> 670	Intercept> -0.04216
Slope----> 32.0970	Certified> 03/21/05
Intercept> -0.4608	
Calibrated> 08/24/05	

Conditions

Temp (deg F) 89	Ta (deg K) 305
Sea Level Press ("Hg 29.12	Pa (mm Hg) 723

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.28	42.0	1.28	-0.12	
With Filter Only		45.2	1.37		1.37

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no

Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/28/05	Make---->	Tisch
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-01	Serial--->	128M
Type---->	TSP/Lead	Slope---->	1.98661
Elevation>	670	Intercept>	-0.04216
Slope---->	32.0970	Certified>	03/21/05
Intercept>	-0.4608		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.79	Pa (mm Hg)	740

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.29	42.0	1.29	-0.11	
With Filter Only		45.5	1.39		1.40

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date----->	08/29/05	Make----->	Tisch
Location-->	TFM Collinsville, OK	Model----->	201780.00
Sampler-->	TE-5000 at AQ-01	Serial--->	128M
Type----->	TSP/Lead	Slope----->	1.98661
Elevation>	670	Intercept>	-0.04216
Slope----->	32.0970	Certified>	03/21/05
Intercept>	-0.4608		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.06	Pa (mm Hg)	721

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.28	42.0	1.27	-0.12	
With Filter Only		45.4	1.38		1.38

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/30/05	Make---->	Tisch
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-01	Serial--->	128M
Type---->	TSP/Lead	Slope---->	1.98661
Elevation>	670	Intercept>	-0.04216
Slope---->	32.0970	Certified>	03/21/05
Intercept>	-0.4608		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.19	Pa (mm Hg)	724

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
6.70	1.28	42.0	1.28	-0.12	
With Filter Only		45.6	1.38		1.39

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
PM10 High Volume Sampler Calibration

SITE

Location: TFM Collinsville, OK
Sampler: TE-6000 at AQ-01

Date: 8/24/2005
Tech: DMC

CONDITIONS

Sampler Elevation (feet):	670		
Sea Level Pressure (in Hg):	29.24	Corrected Pressure (mm Hg):	726
Temperature (deg F):	79	Temperature (deg K):	299
Seasonal SL Press. (in Hg):	29.24	Corrected Seasonal (mm Hg):	726
Seasonal Temp. (deg F):	79	Seasonal Temp. (deg K):	299

CALIBRATION ORIFICE

Make: Tisch Environmental, Inc
Model: 201780
Serial#: 128M

Qa Slope: 1.24398
Qa Intercept: -0.02609
Date Certified: 3/21/2005

CALIBRATION

Plate or Test #	H2O (in)	Qa (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	10.90	1.725	57.0	36.59	Slope = 20.6286
2	8.75	1.548	51.0	32.74	Intercept = 0.8133
3	6.95	1.382	45.0	28.89	Corr. coeff.= 0.9993
4	4.40	1.104	37.0	23.75	SFR = 1.130
5	2.85	0.892	30.0	19.26	SSP = 37.57
# of Observations:					5

CALCULATIONS

$$Qa = 1/m(\text{Sqrt}((H2O)(Ta/Pa))-b)$$

$$IC = I(\text{Sqrt}(Ta/Pa))$$

$$SFR = 1.13(Ps/Pa)(Ta/Ts)$$

$$SSP = (m*SFR+b)(\text{Sqrt}(Pa/Ta))$$

Qa = actual flow rate
IC = corrected chart response
m = calibrator slope
b = calibrator intercept
Ta = actual temperature (deg K)
Pa = actual pressure (mm Hg)

SFR = sampler set point flow rate
SSP = sampler chart set point
m = sampler slope
b = sampler intercept
Ta = actual temperature (deg K)
Pa = actual pressure (mm Hg)
Ts = seasonal temperature (deg K)
Ps = seasonal pressure (mm Hg)

For subsequent calculation of sampler flow:
 $1/m((I)(\text{Sqrt}(Tav/Pav))-b)$

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date---->	08/24/05	Make---->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type---->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope---->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	79	Ta (deg K)	299
Sea Level Press ("Hg)	29.24	Pa (mm Hg)	726

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.10	37.0	1.11	-1.58	
With Filter Only		38.8	1.17		1.19

Is the percent difference $\leq \pm 7\%$?

☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min?

☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date---->	08/25/05	Make---->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type---->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope---->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	92	Ta (deg K)	306
Sea Level Press ("Hg)	29.29	Pa (mm Hg)	727

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.12	37.0	1.12	-0.45	
With Filter Only		39.0	1.19		1.19

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date----> 08/26/05	Make----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780
Sampler--> TE-6000 at AQ-01	Serial---> 128M
Type-----> PM10	Qa Slope-> 1.24398
Elevation> 670	Qa Intercept> -0.02609
Slope----> 20.6286	Certified> 03/21/05
Intercept> 0.8133	
Calibrated> 08/24/05	

Station Conditions

Temp (deg F) 89	Ta (deg K) 305
Sea Level Press ("Hg 29.18	Pa (mm Hg) 724

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.11	37.0	1.12	-0.53	
With Filter Only		39.1	1.19		1.20

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
 Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date---->	08/27/05	Make---->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope---->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F) 89	Ta (deg K) 305
Sea Level Press ("Hg 29.12	Pa (mm Hg) 723

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.12	37.0	1.13	-0.42	
With Filter Only		38.4	1.17		1.17

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date---->	08/28/05	Make---->	Tisch Environmental
Location->	TFM Collinsville, OK	Model---->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope----->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.79	Pa (mm Hg)	740

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.11	37.0	1.11	-1.43	
With Filter Only		38.9	1.17		1.19

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date----->	08/29/05	Make----->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope----->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.06	Pa (mm Hg)	721

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.12	37.0	1.13	-0.32	
With Filter Only		38.8	1.18		1.19

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date----->	08/30/05	Make----->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model----->	201780
Sampler-->	TE-6000 at AQ-01	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	670	Qa Intercept>	-0.02609
Slope----->	20.6286	Certified>	03/21/05
Intercept>	0.8133		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.19	Pa (mm Hg)	724

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.40	1.12	37.0	1.13	-0.36	
With Filter Only		38.0	1.16		1.16

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

TSP Sampler Information

Location AQ-02

08/24/2005 – 08/30/2005

Burns & McDonnell
TSP Sampler Calibration
(Dickson recorder)

SITE

Location: TFM Collinsville, OK Date: 8/24/2005
 Sampler: TE-5000 at AQ-02 Tech: DMC

CONDITIONS

Sampler Elevation (feet):	650		
Sea Level Pressure (in Hg):	29.24	Corrected Pressure (mm Hg):	726
Temperature (deg F):	82	Temperature (deg K):	301
Seasonal SL Press. (in Hg):	29.24	Corrected Seasonal (mm Hg):	726
Seasonal Temp. (deg F):	82	Seasonal Temp. (deg K):	301

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	1.98661
Model:	201780	Qstd Intercept:	-0.04216
Serial#:	128M	Date Certified:	3/21/2005

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	10.65	1.620	54.0	52.54	Slope = 33.7585
2	8.50	1.449	48.0	46.70	Intercept = -2.1497
3	6.55	1.275	43.0	41.84	Corr. coeff. = 0.9937
4	4.35	1.043	32.0	31.14	
5	2.80	0.841	28.0	27.24	# of Observations: 5

Calculations

$$Qstd = 1/m[\sqrt{H2O(Pa/Pstd)(Tstd/Ta)} - b]$$

$$IC = I[\sqrt{Pa/Pstd}(Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

$$1/m((I)[\sqrt{298/Tav}(Pav/760)] - b)$$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/24/05	Make---->	Tisch Environmental
Location->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type----->	TSP/Lead	Slope---->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope---->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	79	Ta (deg K)	299
Sea Level Press ("Hg)	29.24	Pa (mm Hg)	726

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.45	48.0	1.45	-0.15	
With Filter Only		45.4	1.37		1.38

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

<u>Sampler</u>	<u>Calibrator</u>
Date----> 08/25/05	Make----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> TE-5000 at AQ-02	Serial---> 128M
Type-----> TSP/Lead	Slope----> 1.98661
Elevation> 650	Intercept> -0.04216
Slope----> 33.7585	Certified> 03/21/05
Intercept> -2.1497	
Calibrated> 08/24/05	

Conditions

Temp (deg F) 92	Ta (deg K) 306
Sea Level Press ("Hg 29.29	Pa (mm Hg) 727

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.44	48.0	1.44	-0.11	
With Filter Only		45.3	1.36		1.36

Is the percent difference <= +/-7%? ☒ yes ☐ no

Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/26/05	Make---->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type---->	TSP/Lead	Slope---->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope---->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.18	Pa (mm Hg)	725

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.44	48.0	1.44	-0.12	
With Filter Only		45.2	1.36		1.36

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760)) * (298/\text{Ta})) - \text{Intercept}$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760)) * (298/\text{Ta})) - \text{Intercept}$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date----->	08/27/05	Make----->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type----->	TSP/Lead	Slope----->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope----->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.12	Pa (mm Hg)	723

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.44	48.0	1.44	-0.11	
With Filter Only		57.5	1.71		1.71

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date----->	08/28/05	Make----->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type----->	TSP/Lead	Slope----->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope----->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.79	Pa (mm Hg)	740

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.45	48.0	1.45	-0.14	
With Filter Only		47.5	1.43		1.44

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date---->	08/29/05	Make---->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type----->	TSP/Lead	Slope---->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope---->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.06	Pa (mm Hg)	722

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.44	48.0	1.43	-0.11	
With Filter Only		47.3	1.41		1.42

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
TSP Sampler Flow Verification

Sampler

Calibrator

Date----->	08/30/05	Make----->	Tisch Environmental
Location-->	TFM Collinsville, OK	Model----->	201780.00
Sampler-->	TE-5000 at AQ-02	Serial--->	128M
Type----->	TSP/Lead	Slope----->	1.98661
Elevation>	650	Intercept>	-0.04216
Slope----->	33.7585	Certified>	03/21/05
Intercept>	-2.1497		
Calibrated>	08/24/05		

Conditions

Temp (deg F) 91	Ta (deg K) 306
Sea Level Press ("Hg 29.19	Pa (mm Hg) 725

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
8.50	1.44	48.0	1.43	-0.11	
With Filter Only		47.6	1.42		1.42

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.1 - 1.7 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Pa}/760) * (298/\text{Ta})) - \text{Intercept})$
Percent Difference = $(\text{Sampler Flow} - \text{Orifice Flow}) / \text{Orifice Flow} * 100$
Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

PM10 High Volume Sampler Information

Location AQ-02

08/24/2005 – 08/30/2005

Burns & McDonnell
PM10 High Volume Sampler Calibration

SITE

Location: TFM Collinsville, OK Date: 8/24/2005
 Sampler: ASI/GMW 321 at AQ-02 Tech: DMC

CONDITIONS

Sampler Elevation (feet):	650		
Sea Level Pressure (in Hg):	29.24	Corrected Pressure (mm Hg):	726
Temperature (deg F):	82	Temperature (deg K):	301
Seasonal SL Press. (in Hg):	29.24	Corrected Seasonal (mm Hg):	726
Seasonal Temp. (deg F):	82	Seasonal Temp. (deg K):	301

CALIBRATION ORIFICE

Make: Tisch Environmental, Inc	Qa Slope:	1.24398
Model: 201780	Qa Intercept:	-0.02609
Serial#: 128M	Date Certified:	3/21/2005

CALIBRATION

Plate or Test #	H2O (in)	Qa (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	10.65	1.709	52.0	33.47	Slope = 19.4799
2	8.45	1.525	47.0	30.25	Intercept = 0.3903
3	6.75	1.365	42.0	27.03	Corr. coeff.= 0.9992
4	4.25	1.088	34.0	21.88	SFR = 1.130
5	2.80	0.887	27.0	17.38	SSP = 34.81
# of Observations:					5

CALCULATIONS

$$Qa = 1/m(\text{Sqrt}((H2O)(Ta/Pa))-b)$$

$$IC = I(\text{Sqrt}(Ta/Pa))$$

$$SFR = 1.13(Ps/Pa)(Ta/Ts)$$

$$SSP = (m*SFR+b)(\text{Sqrt}(Pa/Ta))$$

Qa = actual flow rate
 IC = corrected chart response
 m = calibrator slope
 b = calibrator intercept
 Ta = actual temperature (deg K)
 Pa = actual pressure (mm Hg)

SFR = sampler set point flow rate
 SSP = sampler chart set point
 m = sampler slope
 b = sampler intercept
 Ta = actual temperature (deg K)
 Pa = actual pressure (mm Hg)
 Ts = seasonal temperature (deg K)
 Ps = seasonal pressure (mm Hg)

For subsequent calculation of sampler flow:
 $1/m((I)(\text{Sqrt}(Tav/Pav))-b)$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date-----> 08/24/05	Make-----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> ASI/GMW 321 at AQ-02	Serial---> 128M
Type-----> PM10	Qa Slope-> 1.24398
Elevation> 650	Qa Intercept> -0.02609
Slope-----> 19.4799	Certified> 03/21/05
Intercept> 0.3903	
Calibrated> 08/24/05	

Station Conditions

Temp (deg F)	79	Ta (deg K)	299
Sea Level Press ("Hg)	29.24	Pa (mm Hg)	726

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.08	34.0	1.10	-2.64	
With Filter Only		34.1	1.10		1.13

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H}_2\text{O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date----->	08/25/05	Make----->	Tisch Environmental
Location->	TFM Collinsville, OK	Model---->	201780.00
Sampler-->	ASI/GMW 321 at AQ-02	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	650	Qa Intercept>	-0.02609
Slope----->	19.4799	Certified>	03/21/05
Intercept>	0.3903		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	92	Ta (deg K)	306
Sea Level Press ("Hg)	29.29	Pa (mm Hg)	727

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.10	34.0	1.11	-1.54	
With Filter Only		35.5	1.16		1.18

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date-----> 08/26/05	Make-----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> ASI/GMW 321 at AQ-02	Serial---> 128M
Type-----> PM10	Qa Slope-> 1.24398
Elevation> 650	Qa Intercept> -0.02609
Slope-----> 19.4799	Certified> 03/21/05
Intercept> 0.3903	
Calibrated> 08/24/05	

Station Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.18	Pa (mm Hg)	725

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.10	34.0	1.11	-1.62	
With Filter Only		34.1	1.11		1.13

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date----> 08/27/05	Make-----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> ASI/GMW 321 at AQ-02	Serial---> 128M
Type-----> PM10	Qa Slope-> 1.24398
Elevation> 650	Qa Intercept> -0.02609
Slope----> 19.4799	Certified> 03/21/05
Intercept> 0.3903	
Calibrated> 08/24/05	

Station Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.12	Pa (mm Hg)	723

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.10	34.0	1.11	-1.52	
With Filter Only		35.9	1.17		1.19

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler

Calibrator

Date----->	08/28/05	Make----->	Tisch Environmental
Location->	TFM Collinsville, OK	Model----->	201780.00
Sampler-->	ASI/GMW 321 at AQ-02	Serial--->	128M
Type----->	PM10	Qa Slope->	1.24398
Elevation>	650	Qa Intercept>	-0.02609
Slope----->	19.4799	Certified>	03/21/05
Intercept>	0.3903		
Calibrated>	08/24/05		

Station Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.79	Pa (mm Hg)	740

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.09	34.0	1.10	-2.49	
With Filter Only		36.3	1.18		1.21

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no
Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$
 Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$
 Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$
 Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date---->	08/29/05
Location->	TFM Collinsville, OK
Sampler-->	ASI/GMW 321 at AQ-02
Type----->	PM10
Elevation>	650
Slope----->	19.4799
Intercept>	0.3903
Calibrated>	08/24/05
Make----->	Tisch Environmental
Model---->	201780.00
Serial--->	128M
Qa Slope->	1.24398
Qa Intercept>	-0.02609
Certified>	03/21/05

Station Conditions

Temp (deg F)	89	Ta (deg K)	305
Sea Level Press ("Hg)	29.06	Pa (mm Hg)	722

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.10	34.0	1.11	-1.41	
With Filter Only		36.2	1.19		1.20

Is the percent difference \leq +/- 7%? ☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} * (\text{SQRT}(\text{H2O} * (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} * (\text{Chart} * \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 * 100$

Corrected Flow = $\text{Sampler Flow} * ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

Burns & McDonnell
Mass Flow Controlled
PM10 Sampler Flow Verification

Sampler	Calibrator
Date----> 08/30/05	Make----> Tisch Environmental
Location-> TFM Collinsville, OK	Model----> 201780.00
Sampler--> ASI/GMW 321 at AQ-02	Serial---> 128M
Type-----> PM10	Qa Slope-> 1.24398
Elevation> 650	Qa Intercept> -0.02609
Slope----> 19.4799	Certified> 03/21/05
Intercept> 0.3903	
Calibrated> 08/24/05	

Station Conditions

Temp (deg F)	91	Ta (deg K)	306
Sea Level Press ("Hg)	29.19	Pa (mm Hg)	725

Results

Orifice In H2O	Orifice m3/min	Dickson Chart	Sampler m3/min	Percent Diff	Corrected flow m3/min
4.25	1.10	34.0	1.11	-1.46	
With Filter Only		36.6	1.20		1.22

Is the percent difference $\leq \pm 7\%$? ☒ yes ☐ no

Is the corrected flow rate 1.017 - 1.243 m3/min? ☒ yes ☐ no

Calculations

Orifice Flow = $1/\text{Slope} \times (\text{SQRT}(\text{H}_2\text{O} \times (\text{Ta}/\text{Pa})) - \text{Intercept})$

Sampler Flow = $1/\text{Slope} \times (\text{Chart} \times \text{SQRT}((\text{Ta}/\text{Pa})) - \text{Intercept})$

Percent Difference = $(\text{Sampler Flow} - 1.13) / 1.13 \times 100$

Corrected Flow = $\text{Sampler Flow} \times ((100 - \text{Percent Difference}) / 100)$ (Without Orifice)

STL Burlington
Colchester, Vermont

Sample Data Summary
Package

SDG: 109536

STL Burlington

208 South Park Drive, Suite 1
Colchester, VT 05446Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

October 14, 2005

Ms. Diane Czarnecki
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 66103Re: Laboratory Project No. 25000
Case: 25000; SDG: 109536

Dear Ms. Czarnecki:

Enclosed are the analytical results for samples received by STL Burlington on September 6, 2005. This report is sequentially numbered starting with page 0001 and ending with page 0189. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 09/06/05 ETR No: 109536			
636649	AR-01 Field Blank	08/24/05	Filter
636650	AQ-1 AR-01 TSP	08/24/05	Filter
636651	AQ-1 AR-02 TSP	08/25/05	Filter
636652	AQ-1 AR-03 TSP	08/26/05	Filter
636653	AQ-1 AR-04 TSP	08/27/05	Filter
636654	AQ-1 AR-05 TSP	08/28/05	Filter
636655	AQ-1 AR-06 TSP	08/29/05	Filter
636656	AQ-1 AR-07 TSP	08/30/05	Filter
636657	AQ-1 AR-01 PM10	08/24/05	Filter
636658	AQ-1 AR-02 PM10	08/25/05	Filter
636659	AQ-1 AR-03 PM10	08/26/05	Filter
636660	AQ-1 AR-04 PM10	08/27/05	Filter
636661	AQ-1 AR-05 PM10	08/28/05	Filter
636662	AQ-1 AR-06 PM10	08/29/05	Filter
636663	AQ-1 AR-07 PM10	08/30/05	Filter
636664	AQ-2 AR-01 TSP	08/24/05	Filter
636665	AQ-2 AR-02 TSP	08/25/05	Filter
636666	AQ-2 AR-03 TSP	08/26/05	Filter
636667	AQ-2 AR-04 TSP	08/27/05	Filter
636668	AQ-2 AR-05 TSP	08/28/05	Filter
636669	AQ-2 AR-06 TSP	08/29/05	Filter
636670	AQ-2 AR-07 TSP	08/30/05	Filter
636671	AQ-2 AR-01 PM10	08/24/05	Filter
636672	AQ-2 AR-02 PM10	08/25/05	Filter
636673	AQ-2 AR-03 PM10	08/26/05	Filter
636674	AQ-2 AR-04 PM10	08/27/05	Filter

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 09/06/05 ETR No: 109536			
636675	AQ-2 AR-05 PM10	08/28/05	Filter
636676	AQ-2 AR-06 PM10	08/29/05	Filter
636677	AQ-2 AR-07 PM10	08/30/05	Filter
636678	Lab Blank	09/01/05	Filter

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

During the original metals analysis of the samples in this delivery group, the associated preparatory filter blank yielded a concentration of Zinc that exceeded the laboratory's reporting limit. All of the samples in this delivery group were re-digested and re-analyzed two additional times yielding generally comparable results between all three analyses. The results from the third analytical sequence have been formally presented, as the blank yielded the lowest Zinc concentration in this sequence. The data associated with the second sequence has also been provided in the raw data section of the data package. The source of the Zinc contamination could not be isolated, but may be inherent to the filters used for analysis.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,



Don Dawicki
Project Manager

Enclosure

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

PM10 High Volume Sampler Information

Location AQ-01

08/24/2005 – 08/30/2005

CHAIN OF CUSTODY RECORD

Report to: Company: <u>Burns & McDonnell</u> Address: <u>9400 Ward Parkway</u> <u>Kansas City, Mo 64114</u> Contact: <u>Diane C Garnecki</u> Phone: <u>816-822-3554</u> Fax: <u>816-822-3517</u> Contract/ Quote: _____		Invoice to: Company: <u>(Same)</u> Address: _____ Contact: _____ Phone: _____ Fax: _____		ANALYSIS REQUESTED <u>Total Weight Gain - TSP</u> <u>Total Weight Gain - PM10</u> <u>Metals - Pb, Zn, Cd, As</u>										Lab Use Only Due Date: _____ Temp. of coolers when received (C°): 1 2 3 4 5 Custody Seal N / Y Intact N / Y Screened For Radioactivity <input type="checkbox"/>							
Sampler's Name <u>David Barker</u>				Sampler's Signature <u>David Barker</u>																	
Proj. No. <u>36478</u>		Project Name <u>Tulsa Fuel+ Manufacturing / ODEQ</u>				No/Type of Containers ² <u>10 P/O</u>															
Matrix ¹	Date	Min Time	C om p	G ra b	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O											Lab/Sample ID (Lab Use Only)	
A	8/24/05	N/A	✓		Filter # <u>0015277 - Field Blank</u>				✓	X	X										
A	8/24/05	1440	✓		Filter # <u>00152775 - AR-01 TSP</u>				✓	X											
A	8/25/05	1440	✓		Filter # <u>00152778 - AR-02 TSP</u>				✓	X											
A	8/24/05	1440	✓		Filter # <u>00152783 - AR-03 TSP</u>				✓	X											
A	8/27/05	1440	✓		Filter # <u>00152787 - AR-04 TSP</u>				✓	X											
A	8/28/05	1440	✓		Filter # <u>00152792 - AR-05 TSP</u>				✓	X											
A	8/29/05	1440	✓		Filter # <u>00152795 - AR-06 TSP</u>				✓	X											
A	8/30/05	1440	✓		Filter # <u>00152763 - AR-07 TSP</u>				✓	X											
A	8/24/05	1439	✓		Filter # <u>00152776 - AR-01 PM10</u>				✓	X	X										
A	8/25/05	1440	✓		Filter # <u>00152780 - AR-02 PM10</u>				✓	X	X										
Relinquished by: (Signature) <u>David Barker</u>		Date <u>09/01/05</u>	Time <u>0930</u>	Received by: (Signature) <u>Diane M. Garnecki</u>		Date <u>9/1/05</u>	Time <u>0830</u>	Remarks <u>Please report mass + concentration</u>													
Relinquished by: (Signature) <u>Diane M. Garnecki</u>		Date <u>9/2/05</u>	Time <u>1427</u>	Received by: (Signature) <u>Fed Ex</u>		Date	Time														
Relinquished by: (Signature) <u>[Signature]</u>		Date	Time	Received by: (Signature) <u>[Signature]</u>		Date <u>9-6-05</u>	Time <u>0420</u>	Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.													
STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248																					

¹Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Airbag C - Charcoal Tube SL - Sludge O - Oil
²Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

Filter in glassine envelope

Report to: Company: <u>Burns + McDannell</u> Address: <u>9400 Ward Parkway</u> <u>Kansas City, Mo 64114</u> Contact: <u>Diane Czarnecki</u> Phone: <u>816-822-3554</u> Fax: <u>816-822-3513</u> Contract/ Quote: _____				Invoice to: Company: <u>(Same)</u> Address: _____ Contact: _____ Phone: _____ Fax: _____				ANALYSIS REQUESTED <div style="border: 1px solid black; padding: 5px; transform: rotate(-15deg); display: inline-block;"> Total Weight Gain - TSP Total Weight Gain - PM10 Metals - Pb, Zn, Cd, As </div>				Lab Use Only Due Date: _____ <hr/> Temp. of coolers when received (C°): <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">1</td> <td style="width:10%;">2</td> <td style="width:10%;">3</td> <td style="width:10%;">4</td> <td style="width:10%;">5</td> </tr> </table> Custody Seal N / Y Intact N / Y <hr/> Screened For Radioactivity <input type="checkbox"/>				1	2	3	4	5																								
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Sampler's Name <u>David Barker</u>				Sampler's Signature 																																								
Proj. No. <u>36478</u>		Project Name <u>Tulsa Fuel+ Manufacturing / ODEQ</u>		No/Type of Containers? <u>10 P/O</u>																																								
Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Lab/Sample ID (Lab Use Only)																																		
A	8/14/05	1440	✓		Filter # 00152784 AR-03 PM10				✓	X	X																																	
A	8/27/05	1167	✓		Filter # 00152788 AR-04 PM10				✓	X	X																																	
A	8/28/05	1440	✓		Filter # 00152791 AR-05 PM10				✓	X	X																																	
A	8/29/05	1440	✓		Filter # 00152796 AR-06 PM10				✓	X	X																																	
A	8/30/05	1440	✓		Filter # 00152764 AR-07 PM10				✓	X	X																																	
A	8/24/05	1440	✓		Filter # 00152774 AR-01 TSP				✓	X																																		
A	8/25/05	1440	✓		Filter # 00152782 AR-02 TSP				✓	X																																		
A	8/26/05	1440	✓		Filter # 00152786 AR-03 TSP				✓	X																																		
A	8/27/05	1440	✓		Filter # 00152789 AR-04 TSP				✓	X																																		
A	8/28/05	1440	✓		Filter # 00152794 AR-05 TSP				✓	X																																		
Relinquished by: (Signature) 		Date <u>9/1/05</u>		Time <u>0930</u>		Received by: (Signature) <u>Diane M. Czarnecki</u>		Date <u>9/1/05</u>		Time <u>0830</u>		Remarks <u>Please report mass + concentration</u> Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.																																
Relinquished by: (Signature) <u>Diane M. Czarnecki</u>		Date <u>9/2/05</u>		Time <u>1427</u>		Received by: (Signature) <u>Red BK</u>		Date <u>9/2/05</u>		Time <u>0920</u>																																		
Relinquished by: (Signature) _____		Date _____		Time _____		Received by: (Signature) _____		Date _____		Time _____																																		
<table border="0" style="width:100%; font-size: small;"> <tr> <td>*Matrix</td> <td>WW - Wastewater</td> <td>W - Water</td> <td>S - Soil</td> <td>L - Liquid</td> <td>A - Air bag</td> <td>C - Charcoal Tube</td> <td>SL - Sludge</td> <td>O - Oil</td> <td colspan="6"></td> </tr> <tr> <td>*Container</td> <td>VOA - 40 ml vial</td> <td>A/G - Amber / Or Glass 1 Liter</td> <td colspan="2">250 ml - Glass wide mouth</td> <td colspan="2">P/O - Plastic or other</td> <td colspan="8"></td> </tr> </table>															*Matrix	WW - Wastewater	W - Water	S - Soil	L - Liquid	A - Air bag	C - Charcoal Tube	SL - Sludge	O - Oil							*Container	VOA - 40 ml vial	A/G - Amber / Or Glass 1 Liter	250 ml - Glass wide mouth		P/O - Plastic or other									
*Matrix	WW - Wastewater	W - Water	S - Soil	L - Liquid	A - Air bag	C - Charcoal Tube	SL - Sludge	O - Oil																																				
*Container	VOA - 40 ml vial	A/G - Amber / Or Glass 1 Liter	250 ml - Glass wide mouth		P/O - Plastic or other																																							

Report to:
Company: Burns & McDonnell
Address: 9400 Ward Parkway
Kansas City, Mo 64114
Contact: Diane Garnecki
Phone: 816-822-3554
Fax: 816-822-3513
Contract/
Quote:

Invoice to:
Company: (Same)
Address:
Contact:
Phone:
Fax:

ANALYSIS
REQUESTED
Total Weight Gain - TSP
Total Weight Gain - PM10
Metals Pb, Zn, Cd, As

Lab Use Only
Due Date:
Temp. of coolers
when received (C°):
12345
Custody Seal N / Y
Intact N / Y
Screened
For Radioactivity

Sampler's Name
David Barker

Sampler's Signature

Proj. No.
36478

Project Name
Tulsa Fuel Manufacturing / ADEQ

No/Type of Containers
10 P/O

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Lab/Sample ID (Lab Use Only)
A	8/29/05	1440	✓		Filter # 00152798 AQ-2 AR-06 TSP				✓ X	
A	8/30/05	1440	✓		Filter # 00152765 AQ-2 AR-07 TSP				✓ X	
A	8/24/05	1444	✓		Filter # 00152779 AQ-2 AR-01 PM10				✓ X X	
A	8/25/05	1440	✓		Filter # 00152781 AQ-2 AR-02 PM10				✓ X X	
A	8/24/05	1440	✓		Filter # 00152785 AQ-2 AR-03 PM10				✓ X X	
A	8/27/05	1440	✓		Filter # 00152790 AQ-2 AR-04 PM10				✓ X X	
A	8/29/05	1440	✓		Filter # 00152793 AQ-2 AR-05 PM10				✓ X X	
A	8/29/05	1440	✓		Filter # 00152799 AQ-2 AR-06 PM10				✓ X X	
A	8/30/05	1440	✓		Filter # 00152766 AQ-2 AR-07 PM10				✓ X X	
A	9/1/05	N/A	✓		Filter # 00152797 Lab Blank				✓ X X	

Relinquished by: (Signature)

Date
8/31/05

Time
0930

Received by: (Signature)
Diane M. Garnecki

Date
9/1/05

Time
0830

Relinquished by: (Signature)
Diane M. Garnecki

Date
9/2/05

Time
1427

Received by: (Signature)
Fed Ex

Date
9-6-05

Time
0420

Remarks
Please report mass + Concentration

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

Matrix
Container

WW - Wastewater
VOA - 40 ml vial

W - Water
A/G - Amber / Or Glass 1 Liter

S - Soil
250 ml - Glass wide mouth

L - Liquid
P/O - Plastic or other

A - Air

Charcoal Tube

SL - Sludge

O - Oil

STL cannot accept verbal changes.
Please Fax written changes to
(802) 655-1248



**Sample Data Summary Package
For Metals**

USEPA-CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

SOW No.: _____

EPA Sample No.	Lab Sample ID.
AQ-1 AR-01 PM10	636657
AQ-1 AR-02 PM10	636658
AQ-1 AR-03 PM10	636659
AQ-1 AR-04 PM10	636660
AQ-1 AR-05 PM10	636661
AQ-1 AR-06 PM10	636662
AQ-1 AR-07 PM10	636663
AQ-2 AR-01 PM10	636671
AQ-2 AR-02 PM10	636672
AQ-2 AR-03 PM10	636673
AQ-2 AR-04 PM10	636674
AQ-2 AR-05 PM10	636675
AQ-2 AR-06 PM10	636676
AQ-2 AR-07 PM10	636677
AR-01 Field Blank	636649
Lab Blank	636678

Were ICP interelement corrections applied? Yes/No YESWere ICP background corrections applied? Yes/No YESIf yes-were raw data generated before application of background corrections? Yes/No NOComments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

COVER PAGE - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-01 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636657
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	4.2	B		P
7440-66-6	Zinc	37.9			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-02 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636658
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	5.7	B		P
7440-66-6	Zinc	44.8			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-03 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636659
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	6.0	B		P
7440-66-6	Zinc	38.1			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002661

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-04 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636660
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	4.7	B		P
7440-66-6	Zinc	33.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002662

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-05 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636661
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	4.7	B		P
7440-66-6	Zinc	26.1			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-06 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636662
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	5.5	B		P
7440-66-6	Zinc	31.8			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-1 AR-07 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636663
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.9	B		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	7.2	B		P
7440-66-6	Zinc	46.2			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-01 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636671
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	4.3	B		P
7440-66-6	Zinc	33.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002666

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-02 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636672
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	7.0	B		P
7440-66-6	Zinc	51.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-03 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636673
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.9	B		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	8.0			P
7440-66-6	Zinc	42.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002668

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-04 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636674
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	5.8	B		P
7440-66-6	Zinc	42.7			P

Color Before: white Clarity Before: _____ Texture: _____
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

Form I - IN

TFM-0002669

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-05 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636675
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	7.9			P
7440-66-6	Zinc	42.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002670

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-06 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636676
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	7.3			P
7440-66-6	Zinc	37.8			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002671

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AQ-2 AR-07 PM10

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636677
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.4	B		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	11.5			P
7440-66-6	Zinc	57.0			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

TFM-0002672

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AR-01 Field Blank

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636649
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.52	B		P
7439-92-1	Lead	2.5	B		P
7440-66-6	Zinc	25.1			P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Lab Blank

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536
Matrix (soil/water): FILTER Lab Sample ID: 636678
Level (low/med): LOW Date Received: 9/6/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/FILTER

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.7	U		P
7440-43-9	Cadmium	0.38	U		P
7439-92-1	Lead	2.1	U		P
7440-66-6	Zinc	13.2	B		P

Color Before: white Clarity Before: _____ Texture: _____Color After: yellow Clarity After: clear Artifacts: _____Comments: _____

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 109536

Initial Calibration Source: Inorganic Ventures/Fisher

Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	250.0	253.30	101.3	100.0	95.69	95.7	97.16	97.2	P
Cadmium	500.0	476.10	95.2	100.0	95.47	95.5	95.50	95.5	P
Lead	1000.0	970.40	97.0	400.0	391.70	97.9	397.50	99.4	P
Zinc	500.0	487.10	97.4	200.0	191.00	95.5	191.20	95.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

TFM-0002675

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 109536
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				100.0	95.16	95.2	99.48	99.5	P
Cadmium				100.0	95.94	95.9	96.67	96.7	P
Lead				400.0	404.10	101.0	406.70	101.7	P
Zinc				200.0	190.60	95.3	194.80	97.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

TFM-0002676

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte				CRDL Standard for ICP					
	True	Found	%R	Initial True	Initial Found	Initial %R	Final Found	Final %R	
Arsenic				20.0	23.93	119.6			
Cadmium				10.0	12.91	129.1			
Lead				6.0	6.93	115.5			
Zinc				40.0	49.13	122.8			

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 109536Preparation Blank Matrix (soil/water): FILTER

Preparation Blank Concentration Units (ug/L or mg/kg):

~~mg/kg~~ ug/filter
KUP 10/12/05

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Arsenic	5.2	U	5.2	U	5.2	U	5.2	U	3.744	U	P
Cadmium	1.7	B	0.5	U	0.5	U	0.5	U	0.382	U	P
Lead	4.5	B	2.9	U	2.9	U	3.5	B	2.088	U	P
Zinc	1.7	U	1.7	U	1.7	U	1.7	U	16.776		P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		5.2	U							P
Cadmium		0.5	U							P
Lead		2.9	U							P
Zinc		1.7	U							P

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 ICS Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	96	-2	101.8	106.0			
Cadmium	0	935	-2	910.3	97.4			
Lead	0	50	13	56.0	112.0			
Zinc	0	910	-7	886.8	97.5			

USEPA-CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536Matrix (soil/water): FILTER Level (low/med): LOW% Solids for Sample: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/FILTE

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80 - 120	26.6256		3.7440	U	28.80	92.4		P
Cadmium	80 - 120	32.8968		0.3816	U	36.00	91.4		P
Lead	80 - 120	14.8752		2.0880	U	14.40	103.3		P
Zinc	80 - 120	354.0960		16.7760		360.00	93.7		P

Comments:

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

AR-01 Field BlankL

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 109536Matrix (soil/water): FILTER

Level (low/med): _____

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
			C			C			
Arsenic	5.20	U		26.00	U				P
Cadmium	0.73	B		2.65	U		100.0		P
Lead	3.42	B		14.50	U		100.0		P
Zinc	34.81			42.83	B		23.0		P

Form IX - IN

TFM-0002682

USEPA-CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536ICP ID Number: TJA ICAP 6 Date: 10/1/2005

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	189.042		10	5.2	P
Cadmium	226.502		5	0.5	P
Lead	220.353		10	2.9	P
Zinc	206.200		20	1.7	P

Comments: _____

Form X - IN

TFM-0002683

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Al	Ca	Fe	Mg	Ag
Aluminum	308.215	0.0000000	0.0000000	0.0002800	0.0002100	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000380	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000980	0.0000000	0.0001000	0.0000020	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000220	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000530	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	-0.0006800	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000080	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	-0.0001000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	-0.0000030	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000280	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000230	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Be	Cd	Co
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0480000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	-0.0015000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	-0.0002400
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0000000	0.0021000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

Form XI (PART 2) - IN

TFM-0002685

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Cr	Cu	Mn	Mo	Na
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0011560	0.0000000
Antimony	206.838	-0.0008700	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	-0.0000190	0.0000000	0.0000000	0.0002340	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0009490	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0002600	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0038000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0019000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0005280	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0002540	0.0000000	0.0014400	0.0015000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000860	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

Form XI (PART 2) - IN

TFM-0002686

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Ni	Pb	P	Sb	Se
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000870	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0001100	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0005700	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	-0.0003200	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0002200	0.0000000	0.0000000	0.0000000

Comments: _____

Form XI (PART 2) - IN

TFM-0002687

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Si	Sn	Sr	Ti	Tl
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0034000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000090	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0002000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001340	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0021600	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0013800	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0008000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0002400	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.1776000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0002500	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0004400	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

Form XI (PART 2) - IN

TFM-0002688

USEPA-CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		V	Zn			
Aluminum	308.215	0.0265000	0.0000000			
Antimony	206.838	-0.0002800	0.0000000			
Arsenic	189.042	-0.0002800	0.0000000			
Barium	493.409	0.0000000	0.0000000			
Beryllium	313.042	0.0005800	0.0000000			
Boron	249.678	0.0000000	0.0000000			
Cadmium	226.502	0.0000000	0.0000000			
Calcium	317.933	0.0000000	0.0000000			
Chromium	267.716	-0.0001800	0.0000000			
Cobalt	228.616	0.0000000	0.0000000			
Copper	324.754	0.0000000	0.0000000			
Iron	271.441	0.0234500	0.0000000			
Lead	220.353	-0.0001140	0.0000000			
Magnesium	279.079	0.0000000	0.0000000			
Manganese	257.610	0.0000000	0.0000000			
Molybdenum	202.030	0.0000000	0.0000000			
Nickel	231.604	0.0000000	0.0000000			
Phosphorus	178.287	0.0000000	0.0146000			
Potassium	766.491	0.0000000	0.0000000			
Selenium	196.026	0.0000000	0.0000000			
Silver	328.068	-0.0001200	0.0000000			
Sodium	330.232	-0.1508200	0.0582800			
Strontium	421.552	0.0000000	0.0000000			
Thallium	190.864	0.0016200	0.0000000			
Tin	189.989	0.0000000	0.0000000			
Titanium	334.941	0.0000000	0.0000000			
Vanadium	292.402	0.0000000	0.0000000			
Zinc	206.200	-0.0001200	0.0000000			

Comments: _____

USEPA-CLP FORMS

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ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536ICP ID Number: TJA ICAP 6 Date: 10/1/2005

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	10.00	5000.0	P
Cadmium	10.00	5000.0	P
Lead	10.00	100000.0	P
Zinc	10.00	10000.0	P

Comments: _____

Form XII - IN

TFM-0002690

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536Method: P

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
AQ-1 AR-01 PM10	10/10/2005	0.14	100.0
AQ-1 AR-02 PM10	10/10/2005	0.14	100.0
AQ-1 AR-03 PM10	10/10/2005	0.14	100.0
AQ-1 AR-04 PM10	10/10/2005	0.14	100.0
AQ-1 AR-05 PM10	10/10/2005	0.14	100.0
AQ-1 AR-06 PM10	10/10/2005	0.14	100.0
AQ-1 AR-07 PM10	10/10/2005	0.14	100.0
AQ-2 AR-01 PM10	10/10/2005	0.14	100.0
AQ-2 AR-02 PM10	10/10/2005	0.14	100.0
AQ-2 AR-03 PM10	10/10/2005	0.14	100.0
AQ-2 AR-04 PM10	10/10/2005	0.14	100.0
AQ-2 AR-05 PM10	10/10/2005	0.14	100.0
AQ-2 AR-06 PM10	10/10/2005	0.14	100.0
AQ-2 AR-07 PM10	10/10/2005	0.14	100.0
AR-01 Field Blank	10/10/2005	0.14	100.0
BLANK	10/10/2005	0.14	100.0
BLANKS	10/10/2005	0.14	100.0
Lab Blank	10/10/2005	0.14	100.0

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 10/10/2005 End Date: 10/10/2005

EPA Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N				
S0	1.00	1741				X			X					X												X					
S	1.00	1745																													
S	1.00	1749				X								X																	
S	1.00	1753							X																	X					
ICV	1.00	1758				X			X					X												X					
ICB	1.00	1802				X			X					X												X					
ICSA	1.00	1807				X			X					X												X					
ICSAB	1.00	1811				X			X					X												X					
CRI	1.00	1816				X			X					X												X					
CCV	1.00	1820				X			X					X												X					
CCB	1.00	1824				X			X					X												X					
ZZZZZZ	1.00	1829																													
ZZZZZZ	1.00	1833																													
AR-01 Field Blank	1.00	1838				X			X					X												X					
AR-01 Field BlankL	5.00	1842				X			X					X												X					
AQ-1 AR-01 PM10	1.00	1846				X			X					X												X					
AQ-1 AR-02 PM10	1.00	1851				X			X					X												X					
AQ-1 AR-03 PM10	1.00	1855				X			X					X												X					
AQ-1 AR-04 PM10	1.00	1859				X			X					X												X					
AQ-1 AR-05 PM10	1.00	1904				X			X					X												X					
AQ-1 AR-06 PM10	1.00	1908				X			X					X												X					
CCV	1.00	1912				X			X					X												X					
CCB	1.00	1917				X			X					X												X					
AQ-1 AR-07 PM10	1.00	1921				X			X					X												X					
AQ-2 AR-01 PM10	1.00	1926				X			X					X												X					
AQ-2 AR-02 PM10	1.00	1930				X			X					X												X					
AQ-2 AR-03 PM10	1.00	1934				X			X					X												X					
AQ-2 AR-04 PM10	1.00	1939				X			X					X												X					
AQ-2 AR-05 PM10	1.00	1943				X			X					X												X					
AQ-2 AR-06 PM10	1.00	1947				X			X					X												X					
AQ-2 AR-07 PM10	1.00	1952				X			X					X												X					
Lab Blank	1.00	1956				X			X					X												X					
BLANK	1.00	2000				X			X					X												X					
CCV	1.00	2005				X			X					X												X					
CCB	1.00	2009				X			X					X												X					
BLANKS	1.00	2014				X			X					X												X					
ZZZZZZ	1.00	2018																													
ZZZZZZ	1.00	2022																													

Form XIV - IN

TFM-0002692

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 109536

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 10/10/2005 End Date: 10/10/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T L	V L	Z N	C N		
ZZZZZZ	5.00	2027																											
ZZZZZZ	1.00	2031																											
ZZZZZZ	1.00	2035																											
CCV	1.00	2040				X			X					X												X			
CCB	1.00	2044				X			X					X												X			



**Geotechnical Analysis
Sample Data Summary Package**

Sample Report Summary

AR-01 Field Blank

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PM10	PM10	09/08/05		ug	1	0.0	-1700	

Sample Report Summary

AQ-1 AR-01 TSP

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	64300	

Printed on: 09/08/05 11:57 AM

TFM-0002696

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-1 AR-02 TSP

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 636651

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	74500	

Printed on: 09/08/05 11:57 AM

TFM-0002697

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-1 AR-04 TSP

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 636653

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	52900	

Printed on: 09/08/05 11:57 AM

TFM-0002699

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-1 AR-05 TSP

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 636654

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	53200	

Printed on: 09/08/05 11:57 AM

TFM-0002700

Sample Report Summary

AQ-1 AR-07 TSP

Date Received: 09/06/05

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	80800	

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-2 AR-03 TSP

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 636666

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PARTICULATE	TSP	09/08/05		ug	1	0.0	44400	

Printed on: 09/08/05 11:57 AM

TFM-0002712

Sample Report Summary

AQ-2 AR-01 PM10

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PM10	PM10	09/08/05		ug	1	0.0	32900	

Printed on: 09/08/05 11:57 AM

TFM-0002717

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-2 AR-02 PM10

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 636672

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PM10	PM10	09/08/05		ug	1	0.0	41300	

Printed on: 09/08/05 11:57 AM

TFM-0002718

GEOTECHNICAL / GENERAL CHEMISTRY

Sample Report Summary

Client Sample No.

AQ-2 AR-07 PM10

Lab Name: STL BURLINGTON

Contract: 36478

SDG No.: 109536

Lab Code: STLVY

Case No.: 25000

Lab Sample ID: 636677

Matrix: FILTER

Client: BURMC4

Date Received: 09/06/05

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PM10	PM10	09/08/05		ug	1	0.0	41800	

Printed on: 09/08/05 11:57 AM

TFM-0002723

Sample Report Summary

Lab Blank

% Solids:

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
PM10	PM10	09/08/05		ug	1	0.0	-1600	

TFM-0002724

Particulate Matter, PM-10
40 CFR Part 50 Appendix J
Calculations

Client Code: BURMC4
ETR: 109536
SDG: 109536

Presampling Conditions

Date: 8/1/2005
Time: 12:31
Analyst: DJP
Relative Humidity (%): 25
Temperature (°C): 24.4

Postsampling Conditions

Date: 9/8/2005
Time: 11:24
Analyst: DJP
Relative Humidity (%): 21
Temperature (°C): 24.6
Equilibration Date: 9/7/2005

Laboratory Number	Filter ID Number	Presampling Weight (g)	Postsampling Weight (g)	Particulate Matter (ug)
636649	Q0152777	4.3987	4.3970	-1700
636650	Q0152775	4.3865	4.4508	64300
636651	Q0152778	4.3967	4.4712	74500
636652	Q0152783	4.3719	4.4169	45000
636653	Q0152787	4.3915	4.4444	52900
636654	Q0152792	4.3865	4.4397	53200
636655	Q0152795	4.3740	4.4416	67600
636657	Q0152776	4.3930	4.4318	38800
636658	Q0152780	4.4014	4.4443	42900
636659	Q0152784	4.3694	4.3949	25500
636660	Q0152788	4.4025	4.4292	26700
636661	Q0152791	4.3880	4.4195	31500
636662	Q0152796	4.3728	4.4062	33400
636664	Q0152774	4.3687	4.4302	61500
636665	Q0152782	4.3730	4.4501	77100
636666	Q0152786	4.3790	4.4234	44400
636667	Q0152789	4.3950	4.4639	68900
636668	Q0152794	4.3764	4.4317	55300
636669	Q0152798	4.3858	4.4528	67000
636671	Q0152773	4.3785	4.4114	32900
636672	Q0152781	4.4027	4.4440	41300

Measure	Range	Control	Within Control?
Temperature	15 to 30 °C	± 3 °C	Y
Humidity	20% to 45%	± 5%	Y

Client Code:	BURMC4
ETR:	109536
SDG:	109536

Date:	8/18/2005
Time:	11:41
Analyst:	DJP
Relative Humidity (%):	25
Temperature (°C):	24.4

Date:	9/8/2005
Time:	11:38
Analyst:	DJP
Relative Humidity (%):	21
Temperature (°C):	24.6
Equilibration Date:	9/7/2005

Measure	Range	Control	Within Control?
Temperature	15 to 30 °C	$\pm 3\text{ }^{\circ}\text{C}$	Y
Humidity	20% to 45%	$\pm 5\%$	Y

**Oklahoma SEL
RI Phase I Data**

**ICP Analysis of Overcalibration XRF Data
Soil and Sediment Samples**

Oklahoma SEL

Analytical Data

ICP Analysis of Overcalibration XRF Data

Soil and Sediment Samples

TFM RI Phase I



STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

October 4, 2006

Tracy Cooley
Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114

Re: TFM Phase I Data – ICP Results

Dear Mr. Cooley:

Enclosed is the hard copy of the Phase I data that our lab emailed to electronically Sharon on September 29, 2006. If you have any questions feel free to contact me at (405) 702-5126 or via email at sara.downard@deq.state.ok.us.

Sincerely,

A handwritten signature in black ink, appearing to read "Sara Downard", is written over a horizontal line.

Sara Downard
Project Manager
Site Remediation Section
Land Protection Division

Enclosure





Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: <u>Tracy Cooley</u>			Laboratory: <u>DEQ-SEL</u> Address: <u>707 N. Robinson</u> City/State/Zip: <u>Oklahoma City, OK 73102</u> Telephone: <u>405-702-1113</u>						Document Control No: <u>08182006A</u> Lab. Reference No. or Episode No.:							
Project Number: <u>3647E</u>				Sample Type				Number of Containers Analysis by ICP Arsenic by ICP Cadmium by ICP Lead by ICP Zinc by ICP Phase I SEL ID								
Client Name: <u>DEQ-TFM</u>				Matrix												
Sample Number		Sample Event		Sample Depth (in feet)		Sample Collected						Liquid	Solid	Gas		
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time								Remarks
TFM	PZ-C7	SSC1		2005	0	0.5	8-2-05			X			X	X	X	381333-403860
	PZ-C9	SSC1		2005	0	0.5	8-2-05			X				X		381339-403861
	PZ-C9	SSC2		2005	0.5	2	8-2-05			X				X		381340-403862
	SP-16	SSC1		2005	0	0.5	7-29-05			X				X		380186-403849
	SP-18	SSC1		2005	0	0.5	7-29-05			X				X		380180-403848
	SP-19	SSC2		2005	0.5	2	7-29-05			X				X		380174-403844
	SP-27	SSC1		2005	0	0.5	7-29-05			X				X		380177-403845
	SP-27	SSC2		2005	0.5	2	7-29-05			X			X	X		380178-403846
	SP-27	SSC3		2005	2	4	7-29-05			X				X		380179-403847
	SP-30	SSC1		2005	0	0.5	8-1-05			X			X	X		380206-403854
	SP-32	SSC1		2005	0	0.5	8-1-05			X				X		380194-403850
	SP-35	SSC1		2005	0	0.5	8-1-05			X				X		380222-403855
	SP-36	SSC1		2005	0	0.5	8-1-05			X						SXS 8-18-06
	SP-38	SSC1		2005	0	0.5	8-1-05			X				X		380198-403851
	SP-39	SSC1		2005	0	0.5	7-29-05			X				X		380169-403843
Sampler (signature):			Sampler (signature):			Special Instructions: <u>ICP reanalysis of TFM</u> <u>Phase I Soil + Sediment with critical</u> <u>XRF - Please analyze batch 115/1150</u>										
Relinquished By (signature):		Date/Time		Received By (signature):		Date/Time		Ice Present in Container:				Temperature Upon Receipt:				
1. <u>[Signature]</u>		8/25/05		<u>[Signature]</u>		8/25/05 10:35		Yes <input type="checkbox"/> No <input type="checkbox"/>								
2. <u>[Signature]</u>		8/25/05 11:40 am		<u>[Signature]</u>		8/26/05 1:05		Laboratory Comments:								



Request for Chemical Analysis and Chain of Custody Record

Document Control No: 08152006B

Lab. Reference No. or Episode No.:

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL

Address: 707 N. Robinson

City/State/Zip: Oklahoma City, OK 73102

Telephone: 405-702-1113

Attention: Tracy Cooley

Project Number: 3047E

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis				Phase I SEL ID	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					Ar-Ar-Ar	Cadmium	Lead	Zinc		
TFM	SP-40	SSC1		2005	0	0.5	7-28-05			X							X	380098-403833
	SP-40	SSC2		2005	0.5	2	7-28-05			X							X	380099-403834
	SP-41	SSC1		2005	0	0.5	8-1-05			X							X	380229-403856
	SP-41	SSC2		2005	0.5	2	8-1-05			X							X	380254-403859
	SP-43	SSC1		2005	0	0.5	8-1-05			X							X	380233-403857
	SP-1011	SSC1		2005	0	0.5	8-1-05			X							X	380234-403858
	SP-47	SSC1		2005	0	0.5	7-28-05			X			X	X	X			380101-403835
	SP-48	SSC1		2005	0	0.5	7-28-05			X							X	380200-403852
	SP-48	SSC2		2005	0.5	2	7-28-05			X			X	X	X			380201-403853
	TR-01	SSC1		2005	0	0.5	7-26-05			X			X	X	X			379564-403811
	TR-1000	SSC1		2005	0	0.5	7-26-05			X			X	X	X			379565-403812
	TR-02	SSC1		2005	0	0.5	7-26-05			X			X	X	X			379568-403813
	TR-03	SSC1		2005	0	0.5	7-26-05			X			X	X	X			379570-403814
	TR-03	SSC2		2005	2.5	3	7-26-05			X							X	379571-403815
	TR-04	SSC1		2005	0	0.5	7-26-05			X			X	X	X			379573-403816

Sampler (signature):

Sampler (signature):

Special Instructions: ICP reanalysis of TFM
Phase I Soil and Sediment with
over calibration XRF - please analyze batch 11/10/05

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

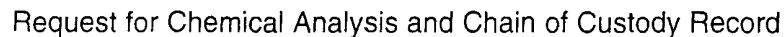
Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

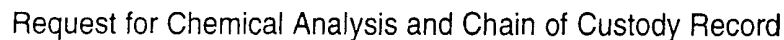


TFM-0002733



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: <i>Tracy Cooley</i>		Laboratory: <i>DEQ - SEL</i>		Document Control No: <i>05182CCGD</i>													
		Address: <i>707 N. ROBINSON</i>		Lab. Reference No. or Episode No.:													
Project Number: <i>36476</i>		City/State/Zip: <i>OKLAHOMA CITY, OK 73102</i>		<div>Analysis Arsenic by ICP Cadmium by ICP Lead by ICP Zinc by ICP</div>													
Client Name: <i>DEQ - TFM</i>		Telephone: <i>405-702-1113</i>															
Sample Type		Matrix															
Sample Number		Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Phase 1 SEL ID				Remarks	
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date										Time
SSS 3-18-06	TR-15	SSC-2		2005	3.75	4.25	7-26-05		X			X	X	X		379604	
<i>TFM</i>	<i>TR-15</i>	<i>SSC-2</i>		<i>2005</i>	<i>3.75</i>	<i>4.25</i>	<i>7-26-05</i>		<i>X</i>				<i>X</i>	<i>X</i>		<i>379590-403824</i>	
	<i>TR-16</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-27-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>379604-403832</i>	
	<i>TR-17</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380127-403837</i>	
	<i>TR-17</i>	<i>SSC-2</i>		<i>2005</i>	<i>0.5</i>	<i>1</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380128-403838</i>	
	<i>TR-18</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380130-403839</i>	
	<i>TR-19</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380133-403840</i>	
	<i>TR-20</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380136-403841</i>	
	<i>TR-21</i>	<i>SSC-1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-28-05</i>		<i>X</i>			<i>X</i>	<i>X</i>	<i>X</i>		<i>380138-403842</i>	
	<i>MSR-C1</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-19-05</i>		<i>X</i>				<i>X</i>			<i>378877-403800</i>	
	<i>MSR-C2</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-19-05</i>		<i>X</i>				<i>X</i>			<i>378878-403801</i>	
	<i>MSR-C3</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-19-05</i>		<i>X</i>				<i>X</i>	<i>X</i>		<i>378879-403802</i>	
	<i>CFE-C2</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-20-05</i>		<i>X</i>				<i>X</i>			<i>378895-403807</i>	
	<i>CFE-C4</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-20-05</i>		<i>X</i>				<i>X</i>			<i>378897-403808</i>	
	<i>CFE-C7</i>	<i>SDC1</i>		<i>2005</i>	<i>0</i>	<i>0.5</i>	<i>7-20-05</i>		<i>X</i>				<i>X</i>			<i>378902-403809</i>	
Sampler (signature):			Sampler (signature):			Special Instructions: <i>ICP reanalysis of TFM Phase 1 Soil + sediment with recalibration XRF Please analyze both nrs/msis</i>											
Relinquished By (signature):			Date/Time			Received By (signature):			Date/Time			Ice Present in Container:			Temperature Upon Receipt:		
1. <i>[Signature]</i>			<i>10:35</i> <i>03-23-06</i>			<i>[Signature]</i>			<i>03-23-06</i> <i>10:35</i>			Yes <input type="checkbox"/> No <input type="checkbox"/>					
Relinquished By (signature):			Date/Time			Received By (signature):			Date/Time			Laboratory Comments:					
2. <i>[Signature]</i>			<i>03-23-06</i> <i>11:40AM</i>			<i>[Signature]</i>			<i>03-23-06</i> <i>1:05</i>								



Laboratory: DEQ - SEL
Address: 707 N. Robinson
City/State/Zip: Oklahoma City, OK 73102
Telephone: 405-702-1113

Lab. Reference No. or Episode No.:

Attention: *Tracy Cook*

Project Number: 30478

Sample Type

Client Name: DEQ - TFM

Matrix

Number of Containers

Analysis	Mercury by ICP	Cadmium by ICP	Lead by ICP	Zinc by ICP
----------	----------------	----------------	-------------	-------------

Phase I SCLTD	Remarks
------------------	---------

Sampler (signature):

Sampler (signature):

Special Instructions: ICP reanalysis of TFA/Phase I
soil + sediment with overcalibration XRF
Please analyze batch 113/11310

Relinquished By (signature):

Date/Time
1035
09-28-06

Received By (signature):

Date/Time
8/28/2016
10:35 am

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature) _____

Date/Time
8/28/2014
11:40 AM

Received By (signature):

Date/Time
8-28-06
1:05

Laboratory Comments:

Sample Number: 403800
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1417
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/28/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
Final Copying 10/26/2006

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		24400	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SEL # 378877; MSR-01/SD01

ANALYST'S COMMENTS:

* ANALYST 

Sample Number: 403801
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1428
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/28/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
148 Drinking Water Certification 12/09/03

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		20700	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378878;MSR-02/SD01

ANALYST'S COMMENTS:

*

* ANALYST

Sample Number: 403802
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1433
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/28/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Contract # 680-01-0001

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		8150	MG/KG	09/22/06	6010
Zinc, Sediment		34700	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378879; MSR-03/SD01

ANALYST'S COMMENTS:

*

* ANALYST 

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
APR 20 1994 10 11 AM 1994

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		7140	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:
Metals

SOURCE: TULSA FULE & MANUFAC

SAMPLERS COMMENTS:
SEL # 378880; PD04-01/SD01

ANALYST'S COMMENTS:

* ANALYST

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Contract Number: 68-03-0010-101

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		6940	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378888; PD1-03/SD01

ANALYST'S COMMENTS:

* ANALYST

Sample Number: 403805
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0839
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		9590	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

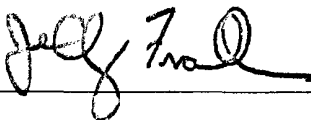
SAMPLERS COMMENTS:

SEL # 378889; PD2-02/SD01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403806
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0922
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		9700	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

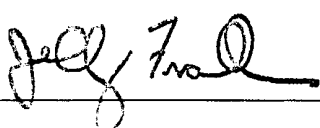
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378893; PD3-02/SD01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403807
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1059
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		7150	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

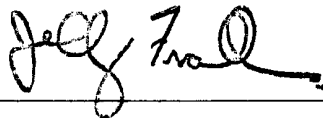
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378895; OFF-02/SD01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403808
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1120
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		26700	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

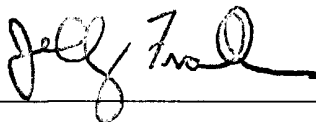
SAMPLERS COMMENTS:

SEL # 378897; OFF-04/SD01; MS/MSD

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403809
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1206
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
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To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		15600	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

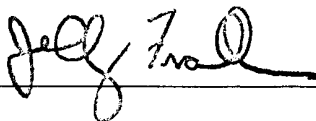
SAMPLERS COMMENTS:

SEL # 378902; OFF-07/SD01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403810
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1212
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		6490	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

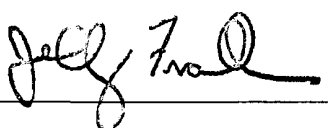
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 378904; OFF-1000/SD01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403811
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0916
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		548	MG/KG	09/22/06	6010
Lead, Sediment		20100	MG/KG	09/22/06	6010
Zinc, Sediment		145000	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

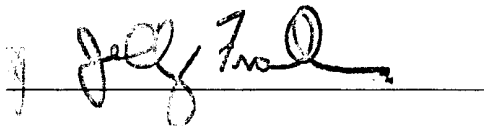
SAMPLERS COMMENTS:

SEL # 379564; TR-01/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403812
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0916
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		455	MG/KG	09/22/06	6010
Lead, Sediment		18100	MG/KG	09/22/06	6010
Zinc, Sediment		148000	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

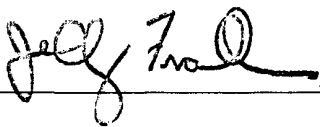
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379565; TR-1000/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403813
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 0824
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		751	MG/KG	09/22/06	6010
Lead, Sediment		20700	MG/KG	09/22/06	6010
Zinc, Sediment		76600	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

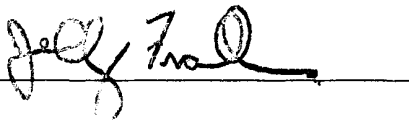
SAMPLERS COMMENTS:

SEL # 379568; TR-02/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403814
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1431
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		242	MG/KG	09/22/06	6010
Lead, Sediment		13600	MG/KG	09/22/06	6010
Zinc, Sediment		19900	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

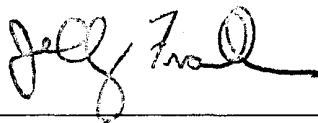
SAMPLERS COMMENTS:

SEL # 379570; TR-03/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403815
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1440
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		18400	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

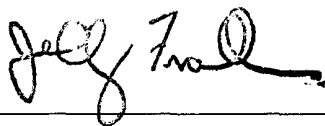
SAMPLERS COMMENTS:

SEL # 379571; TR-03/SS02; MS/MSD

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403816
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1410
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		554	MG/KG	09/22/06	6010
Lead, Sediment		71700	MG/KG	09/22/06	6010
Zinc, Sediment		96100	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

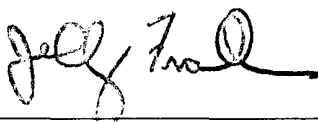
SAMPLERS COMMENTS:

SEL # 379573; TR-04/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403817
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1029
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		6890	MG/KG	09/22/06	6010
Zinc, Sediment		37500	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

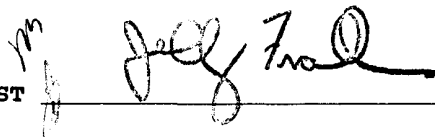
SAMPLERS COMMENTS:

SEL # 379576; TR-05/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403818
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1103
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		7500	MG/KG	09/22/06	6010
Zinc, Sediment		36800	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

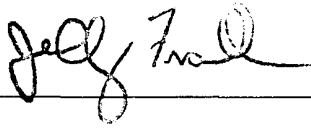
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379579; TR-06/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403819
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1200
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		492	MG/KG	09/22/06	6010
Lead, Sediment		23700	MG/KG	09/22/06	6010
Zinc, Sediment		84700	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

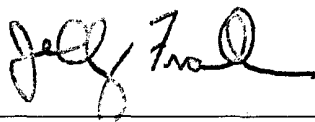
SAMPLERS COMMENTS:

SEL # 379581; TR-07/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403820
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1514
Date Received: 08/28/2006
Date Completed: 09/25/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/25/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		203	MG/KG	09/22/06	6010
Lead, Sediment		10300	MG/KG	09/22/06	6010
Zinc, Sediment		37000	MG/KG	09/22/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

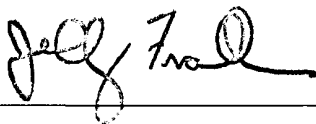
SAMPLERS COMMENTS:

SEL # 379584; TR-08/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403821
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1130
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		25800	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

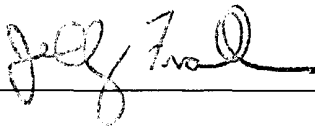
SAMPLERS COMMENTS:

SEL # 379586; TR-11/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403822
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1135
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		16000	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

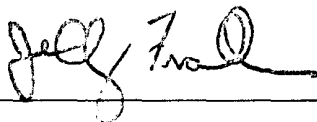
SAMPLERS COMMENTS:

SEL # 379587; TR-11/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403823
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1558
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		12800	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

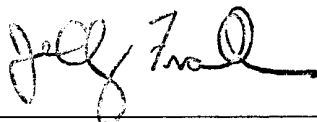
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379589; TR-15/SS01

ANALYST'S COMMENTS:



* ANALYST _____

Sample Number: 403824
Project Code: TF-SED
Agency Number:
Date Collected: 07/26/2005
Time Collected: 1610
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		7550	MG/KG	09/25/06	6010
Zinc, Sediment		19400	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

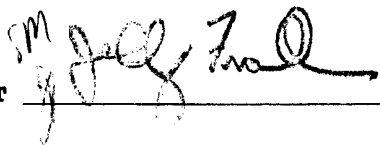
SAMPLERS COMMENTS:

SEL # 379590; TR-15/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403825
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1202
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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To: LAND PROTECTION DIVISION
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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		620	MG/KG	09/25/06	6010
Lead, Sediment		17000	MG/KG	09/25/06	6010
Zinc, Sediment		129000	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379592; TR-09/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403826
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1227
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		504	MG/KG	09/25/06	6010
Lead, Sediment		12700	MG/KG	09/25/06	6010
Zinc, Sediment		81400	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

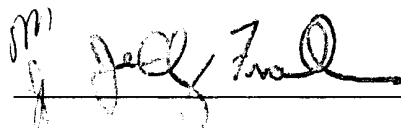
SAMPLERS COMMENTS:

SEL # 379594; TR-1002/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403827
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1007
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		1050	MG/KG	09/25/06	6010
Cadmium , Sediment		1620	MG/KG	09/25/06	6010
Lead, Sediment		25600	MG/KG	09/25/06	6010
Zinc, Sediment		165000	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379596; TR-10/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403828
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1400
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		525	MG/KG	09/25/06	6010
Cadmium , Sediment		840	MG/KG	09/25/06	6010
Lead, Sediment		28700	MG/KG	09/25/06	6010
Zinc, Sediment		118000	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

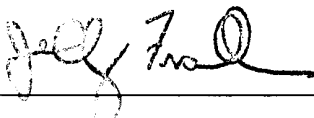
SAMPLERS COMMENTS:

SEL # 379598; TR-13/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403829
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1459
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		13100	MG/KG	09/25/06	6010
Zinc, Sediment		39300	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

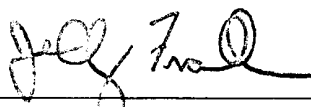
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379599; TR-13/SS02

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403830
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0832
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		4520	MG/KG	09/25/06	6010
Zinc, Sediment		25100	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379601; TR-14/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403831
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0832
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		155	MG/KG	09/25/06	6010
Lead, Sediment		5660	MG/KG	09/25/06	6010
Zinc, Sediment		30800	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 379602; TR-1003/SS01

ANALYST'S COMMENTS:

*

* ANALYST 

Sample Number: 403832
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 0921
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 12/18/2006

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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		135	MG/KG	09/25/06	6010
Lead, Sediment		4770	MG/KG	09/25/06	6010
Zinc, Sediment		15200	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

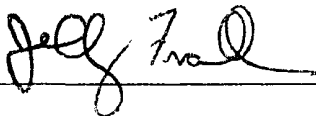
SAMPLERS COMMENTS:

SEL # 379604; TR-16/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403833
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1510
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		85900	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

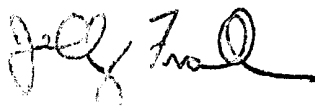
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380098; SP-40/SS01

ANALYST'S COMMENTS:



*

* ANALYST

Sample Number: 403834
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1515
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		4270	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380099; SP-40/SS02; MS/MSD

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403835
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1530
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Cadmium , Sediment		799	MG/KG	09/25/06	6010
Lead, Sediment		3650	MG/KG	09/25/06	6010
Zinc, Sediment		41400	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

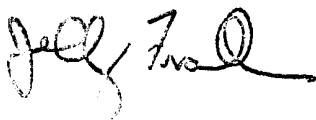
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380101; SP-47/SS01

ANALYST'S COMMENTS:



*

* ANALYST _____

Sample Number: 403836
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0831
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		219	MG/KG	09/25/06	6010
Lead, Sediment		27300	MG/KG	09/25/06	6010
Zinc, Sediment		51400	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

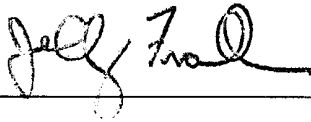
SAMPLERS COMMENTS:

SEL # 380125; TR-12/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403837
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1202
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		909	MG/KG	09/25/06	6010
Lead, Sediment		27000	MG/KG	09/25/06	6010
Zinc, Sediment		52000	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380127; TR-17/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403838
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1227
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		330	MG/KG	09/25/06	6010
Lead, Sediment		15000	MG/KG	09/25/06	6010
Zinc, Sediment		27700	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

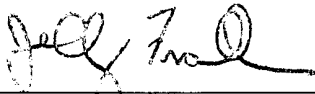
SAMPLERS COMMENTS:

SEL # 380128; TR-17/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403839
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1112
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		805	MG/KG	09/25/06	6010
Lead, Sediment		61600	MG/KG	09/25/06	6010
Zinc, Sediment		70500	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

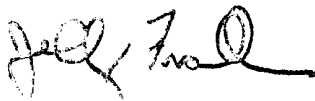
SAMPLERS COMMENTS:

SEL # 380130; TR-18/SS01

ANALYST'S COMMENTS:

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* ANALYST



Sample Number: 403840
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 0857
Date Received: 08/28/2006
Date Completed: 09/26/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/26/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		270	MG/KG	09/25/06	6010
Lead, Sediment		25100	MG/KG	09/25/06	6010
Zinc, Sediment		75800	MG/KG	09/25/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

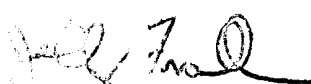
SAMPLERS COMMENTS:

SEL # 380133; TR-19/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403841
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1035
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		480	MG/KG	09/26/06	6010
Lead, Sediment		38600	MG/KG	09/26/06	6010
Zinc, Sediment		53100	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

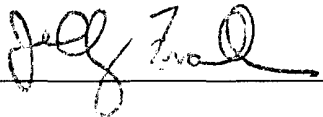
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380136; TR-20/SS01

ANALYST'S COMMENTS:

* * ANALYST 

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

Sample Number: 403842
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1000
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		625	MG/KG	09/26/06	6010
Lead, Sediment		28800	MG/KG	09/26/06	6010
Zinc, Sediment		82900	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SEL # 380138; TR-21/SS01

ANALYST`S COMMENTS:

* ANALYST 

Sample Number: 403843
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1150
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

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To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		11800	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380169; SP-39/SS01

ANALYST'S COMMENTS:

* ANALYST 

Sample Number: 403811
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1322
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		8280	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

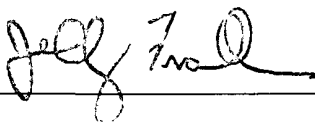
SAMPLERS COMMENTS:

SEL # 380174; SP-19/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403845
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1338
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		11600	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

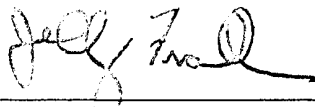
SAMPLERS COMMENTS:

SEL # 380177; SP-27/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403846
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1340
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/28/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		4230	MG/KG	09/26/06	6010
Zinc, Sediment		30900	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

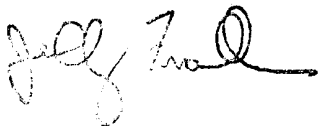
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380178; SP-27/SS02

ANALYST'S COMMENTS:



*

* ANALYST

Sample Number: 403847
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1344
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		2290	MG/KG	09/26/06	6010
Zinc, Sediment		21600	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380179; SP-27/SS03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403843
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1410
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		8130	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

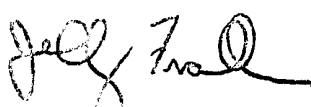
SAMPLERS COMMENTS:

SEL # 380180; SP-18/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403849
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1437
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		5860	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380186; SP-16/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403850
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1215
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		4860	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

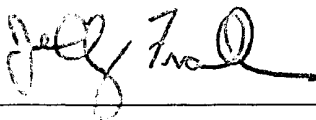
SAMPLERS COMMENTS:

SEL # 380194; SP-32/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403851
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1325
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		6240	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380198; SP-38/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403852
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1420
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		47900	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380200; SP-48/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403853
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1422
Date Received: 08/28/2005
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		703	MG/KG	09/26/06	6010
Lead, Sediment		13800	MG/KG	09/26/06	6010
Zinc, Sediment		33000	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

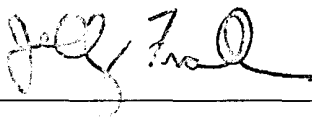
SAMPLERS COMMENTS:

SEL # 380201; SP-48/SS02

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403854
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1145
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Lead, Sediment		5170	MG/KG	09/26/06	6010
Zinc, Sediment		35600	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

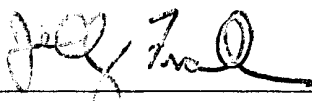
SAMPLERS COMMENTS:

SEL # 380206; SP-30/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403855
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1110
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		10300	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

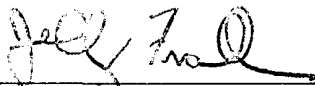
SAMPLERS COMMENTS:

SEL # 380222; SP-35/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403856
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1346
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
FWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		18700	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380229; SP-41/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403857
Project Code: TF-SED
Agency Number:
Date Collected: 03/01/2005
Time Collected: 1442
Date Received: 03/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		9460	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380233; SP-43/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403858
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1442
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		6520	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

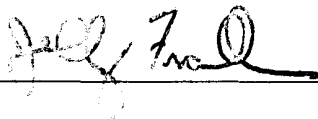
SAMPLERS COMMENTS:

SEL # 380234; SP-1011/SS01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 403859
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1350
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		13700	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

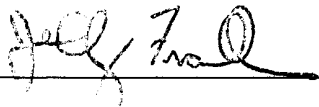
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 380254; SP-41/SS02

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403860
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1215
Date Received: 08/28/2005
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		108	MG/KG	09/26/06	6010
Lead, Sediment		7820	MG/KG	09/26/06	6010
Zinc, Sediment		15200	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

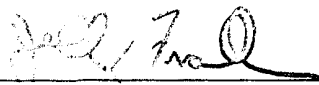
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 381333; PZ-07/SS01

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 403861
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1433
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/28/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
Water Quality Laboratory Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		14300	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SEL # 381339; PZ-09/SS01

ANALYST'S COMMENTS:



* ANALYST _____

Sample Number: 403862
Project Code: TF-SED
Agency Number:
Date Collected: 08/02/2005
Time Collected: 1435
Date Received: 08/28/2006
Date Completed: 09/27/2006
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 09/27/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		10800	MG/KG	09/26/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

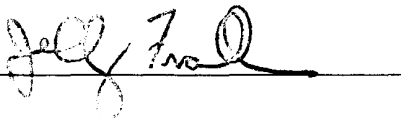
SEL # 381340; PZ-04/SS02

09 S&S 12-13-06

ANALYST'S COMMENTS:

*

* ANALYST



QC for

Overcal

Phase I Reanalysis
Data

ICP Reanalysis in Sept. 06

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 403800 to 403820
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 9/22/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	Initial	Final		9/12/2006		
		1	2	3	1	2	3
Arsenic	< 10	<	<		<		
Cadmium	< 1	<	<		<		
Lead	< 10	<	<		<		
Zinc	< 12	<	<		<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 403800 to 403820
 Project Code: TF-SED
 Date of Analysis: 9/22/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	989	98.9	991	99.1	0.2%
Cadmium	1000	992	99.2	986	98.6	0.6%
Lead	1000	991	99.1	998	99.8	0.7%
Zinc	1000	1010	101.0	935	93.5	7.7%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 403800 to 403820
 Project Code: TF-SED
 Date of Analysis: 9/22/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	5060	101.2	5010	100.2	1.0%
Cadmium	5000	5100	102.0	5050	101.0	1.0%
Lead	5000	5050	101.0	5000	100.0	1.0%
Zinc	5000	5060	101.2	4690	93.8	7.6%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 403821 to 403840
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 9/25/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	Initial	Final				
		1	2	3	1	2	3
Arsenic	< 10	<	<				
Cadmium	< 1	<	<				
Lead	< 10	<	<				
Zinc	< 12	<	<				

COMMENTS:

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 403821 to 403840
 Project Code: TF-SED
 Date of Analysis: 9/25/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	974	97.4	972	97.2	0.2%
Cadmium	1000	976	97.6	965	96.5	1.1%
Lead	1000	977	97.7	971	97.1	0.6%
Zinc	1000	999	99.9	913	91.3	9.0%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP

SEL Sample Range: 403821 to 403840
 Project Code: TF-SED
 Date of Analysis: 9/25/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4960	99.2	4930	98.6	0.6%
Cadmium	5000	4960	99.2	4890	97.8	1.4%
Lead	5000	4920	98.4	4870	97.4	1.0%
Zinc	5000	4950	99.0	4510	90.2	9.3%

Control Limits¹: 90-110%

Upper RPD Control Limits²:

10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 403841 to 403862
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 9/26/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	Initial	Final				
		1	2	3	1	2	3
Arsenic	< 10	<	<				
Cadmium	< 1	<	<				
Lead	< 10	<	<				
Zinc	< 12	<	<				

COMMENTS:

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 403841 to 403862
 Project Code: TF-SED
 Date of Analysis: 9/26/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	952	95.2	941	94.1	1.2%
Cadmium	1000	961	96.1	948	94.8	1.4%
Lead	1000	971	97.1	967	96.7	0.4%
Zinc	1000	987	98.7	930	93.0	5.9%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 403841 to 403862
 Project Code: TF-SED
 Date of Analysis: 9/26/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4900	98.0	4850	97.0	1.0%
Cadmium	5000	4940	98.8	4890	97.8	1.0%
Lead	5000	4900	98.0	4870	97.4	0.6%
Zinc	5000	4960	99.2	4700	94.0	5.4%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

Oklahoma SEL

**Sieve #60 vs Sieve #200 Study
ICP and XRF Metals Data**

Oklahoma SEL

Analytical Data

Sieve #60 vs Sieve #200 Study

XRF and ICP Metals Data

Soil and Sediment Samples



021708 Form WCD-KC1

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-9400 Fax: (816) 822-3494 Attention: <u>Tracy Cooley</u>				Laboratory: <u>DEQ-SEL</u>				Document Control No: <u>06232006A</u>						
				Address: <u>707 N. Robinson</u>				Lab. Reference No. or Episode No.:						
Project Number: <u>36478</u>				Sample Type				<div style="text-align: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Analysis</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">XRF - As, Cd, Pb, Zn - 60</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">ICP - As, Cd, Pb, Zn</div> </div>						
Client Name: <u>DEQ - TFM</u>				Matrix										
Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Lab ID	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	BG-OSL-01	SS01		2005	0	0.25	8-31-05		X			X X	399854	382610
		OFF-10	SD01	2005	0	0.5	7-20-05		X			X X	399855	379559 / 379560
		OSL-01	SS01	2005	0	0.25	8-30-05		X			X X	399856	382601
		OSL-12	SS01	2005	0	0.25	8-29-05		X			X X	399857	382567
		OSL-17	SS01	2005	0	0.25	8-31-05		X			X X	399858	382605
		OSL-1002	SS01	2005	0	0.25	8-31-05		X			X X	399859	382630
		OSL-39	SS01	2005	0	0.25	8-31-05		X			X X	399860	382623
		OSL-1001	SS01	2005	0	0.25	8-31-05		X			X X	399861	382629
		OSL-50	SS01	2005	0	0.25	8-31-05		X			X X	399862	382619
		OSL-69	SS01	2005	0	0.25	8-29-05		X			X X	399863	382573
		PD1-02	SD01	2005	0	0.5	7-20-05		X			X X	399864	378882 / 378885
		PZ-04	SS04	2005	4	8	8-2-05		X			X X	399865	381331
		SMP-03	SD01	2005	0	0.5	7-19-05		X			X X	399866	378870 / 378872
		SP-01	SS01	2005	0	0.5	7-28-05		X			X X	399867	380114
	↓	SP-05	SS01	2005	0	0.5	7-29-05		X			X X	399868	380140
Sampler (signature):				Sampler (signature):				Special Instructions: <u>Sample for use with 60-seve XRF + ICP comparison study</u>						
Relinquished By (signature): 1. <u>[Signature]</u>		Date/Time <u>6/23/06 10:25</u>		Received By (signature): <u>[Signature]</u>		Date/Time <u>6-23-06 10:25</u>		Ice Present in Container: Yes <input type="checkbox"/> No <input type="checkbox"/>		Temperature Upon Receipt:				
Relinquished By (signature): 2.		Date/Time		Received By (signature): <u>[Signature]</u>		Date/Time <u>6-23-06 10:40</u>		Laboratory Comments:						

TFM-0002811



021708 Form WCD-KC1

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-9400 Fax: (816) 822-3494

Attention: Tracy Cooley

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405-702-1113

Document Control No: 06232006B

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ - TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis XRF - As, Cd, Pb, Zn, Se, 60 ICP - As, Cd, Pb, Zn	Lab ID	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time							
TFM	SP-18	SS03		2005	2	4	7-29-05			X			X X	399869	380182
	SP-22	SS01		2005	0	0.5	7-29-05			X			X X	399870	380149
	SP-25	SS02		2005	0.5	2	7-29-05			X			X X	399871	380163
	SP-36	SS01		2005	0	0.5	8-1-05			X			X X	399872	380218
	SP-46	SS01		2005	0	0.5	8-1-05			X			X X	399873	380240
	SP-53	SS01		2005	0	0.5	8-1-05			X			X X	399874	380264
	SP-1014	SS01		2005	0	0.5	8-1-05			X			X X	399875	380265
	TR-13	SS03		2005	5.5	6	7-27-05			X			X X	399876	379600
	TRB-10	SS01		2005	0	0.25	8-29-05			X			X X	399877	382569
↓	TSL-04	SS01		2005	0	0.25	8-30-05			X			X X	399878	382584

Sampler (signature):

Sampler (signature):

Special Instructions: Samples for use with 60-Sieve XRF + ICP Comparison Study

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. [Signature]

6/23/06 10:25

[Signature]

6-23-06 10:40

Yes ☐ No ☐

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2.

[Signature]

6-23-06

10:40

TFM-0002812

Sample Number: 399854
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1535
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	06/30/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	06/30/06	6200
Cadmium, Sediment	<	1	MG/KG	07/12/06	6010
Lead, XRF		24	MG/KG	06/30/06	6200
Lead, Sediment		30	MG/KG	07/12/06	6010
Zinc, XRF		124	MG/KG	06/30/06	6200
Zinc, Sediment		91	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

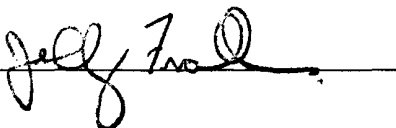
SAMPLERS COMMENTS:
BG-OSL-01/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382610

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399855
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 1555
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		179	MG/KG	06/30/06	6200
Arsenic, Sediment		93	MG/KG	07/12/06	6010
Cadmium, XRF		232	MG/KG	06/30/06	6200
Cadmium, Sediment		176	MG/KG	07/12/06	6010
Lead, XRF		2580	MG/KG	06/30/06	6200
Lead, Sediment		1810	MG/KG	07/12/06	6010
Zinc, XRF	>	7000	MG/KG	06/30/06	6200
Zinc, Sediment		15000	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-10/SD01

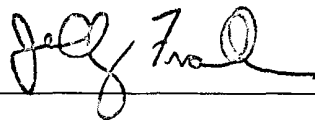
SAMPLE RECEIVING COMMENTS:

SEL # 379559

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399856
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1723
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	06/30/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	06/30/06	6200
Cadmium , Sediment	<	1	MG/KG	07/12/06	6010
Lead, XRF	<	20	MG/KG	06/30/06	6200
Lead, Sediment		22	MG/KG	07/12/06	6010
Zinc, XRF		165	MG/KG	06/30/06	6200
Zinc, Sediment		65	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

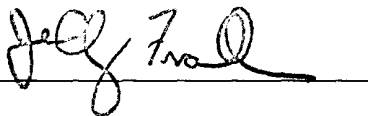
SAMPLERS COMMENTS:
OSL-01/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382601

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399857
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1407
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		36	MG/KG	06/30/06	6200
Arsenic, Sediment		28	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	06/30/06	6200
Cadmium, Sediment		4	MG/KG	07/12/06	6010
Lead, XRF		509	MG/KG	06/30/06	6200
Lead, Sediment		383	MG/KG	07/12/06	6010
Zinc, XRF		948	MG/KG	06/30/06	6200
Zinc, Sediment		660	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

SAMPLERS COMMENTS:

OSL-12/SS01

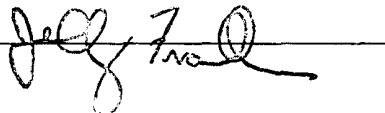
SAMPLE RECEIVING COMMENTS:

SEL # 382567

ANALYST`S COMMENTS:

*

* ANALYST



Sample Number: 399858
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1620
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	06/30/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	06/30/06	6200
Cadmium , Sediment		2	MG/KG	07/12/06	6010
Lead, XRF		80	MG/KG	06/30/06	6200
Lead, Sediment		66	MG/KG	07/12/06	6010
Zinc, XRF		458	MG/KG	06/30/06	6200
Zinc, Sediment		301	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

SAMPLERS COMMENTS:

OSL-17/SS01

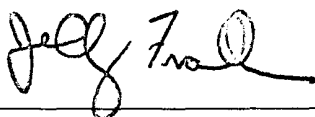
SAMPLE RECEIVING COMMENTS:

SEL # 382605

ANALYST`S COMMENTS:

*

* ANALYST



Sample Number: 399859
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 1620
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	06/30/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	06/30/06	6200
Cadmium, Sediment		2	MG/KG	07/12/06	6010
Lead, XRF		106	MG/KG	06/30/06	6200
Lead, Sediment		71	MG/KG	07/12/06	6010
Zinc, XRF		431	MG/KG	06/30/06	6200
Zinc, Sediment		316	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

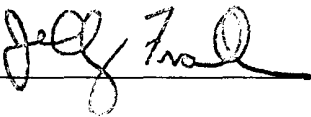
Metals

SOURCE: TULSA FUEL& MANUFAC

SAMPLERS COMMENTS:
OSL-1002/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382630

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 399860
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0835
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		45	MG/KG	06/30/06	6200
Arsenic, Sediment		20	MG/KG	07/12/06	6010
Cadmium, XRF		27	MG/KG	06/30/06	6200
Cadmium , Sediment		19	MG/KG	07/12/06	6010
Lead, XRF		735	MG/KG	06/30/06	6200
Lead, Sediment		604	MG/KG	07/12/06	6010
Zinc, XRF		2820	MG/KG	06/30/06	6200
Zinc, Sediment		2200	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

SAMPLERS COMMENTS:
OSL-39/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382623

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 399861
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0835
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		59	MG/KG	06/30/06	6200
Arsenic, Sediment		24	MG/KG	07/12/06	6010
Cadmium, XRF		31	MG/KG	06/30/06	6200
Cadmium, Sediment		19	MG/KG	07/12/06	6010
Lead, XRF		970	MG/KG	06/30/06	6200
Lead, Sediment		733	MG/KG	07/12/06	6010
Zinc, XRF		3010	MG/KG	06/30/06	6200
Zinc, Sediment		2270	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-1001/SS01

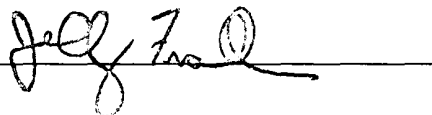
SAMPLE RECEIVING COMMENTS:

SEL # 382629

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399862
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2005
Time Collected: 0950
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 02/01/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		<	10 MG/KG	07/03/06	6200
Arsenic, Sediment		<	10 MG/KG	07/12/06	6010
Cadmium, XRF	J	<	10 MG/KG	07/03/06	6200
Cadmium, Sediment		<	1 MG/KG	07/12/06	6010
Lead, XRF			35 MG/KG	07/03/06	6200
Lead, Sediment			30 MG/KG	07/12/06	6010
Zinc, XRF			165 MG/KG	07/03/06	6200
Zinc, Sediment			108 MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

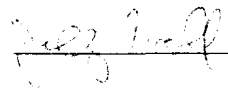
SAMPLERS COMMENTS:
OSL-50/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382619

ANALYST'S COMMENTS:
(CF) Corrected final report.
(J) The associated value is an estimated quantity.

*

* ANALYST



Sample Number: 399863
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1710
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 02/01/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14	MG/KG	07/03/06	6200
Arsenic, Sediment		17	MG/KG	07/12/06	6010
Cadmium, XRF	J	<	10	MG/KG	07/03/06
Cadmium, Sediment		5	MG/KG	07/12/06	6010
Lead, XRF		210	MG/KG	07/03/06	6200
Lead, Sediment		164	MG/KG	07/12/06	6010
Zinc, XRF		749	MG/KG	07/03/06	6200
Zinc, Sediment		542	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-69/SS01

SAMPLE RECEIVING COMMENTS:

SEL # 382573

ANALYST'S COMMENTS:

(J) The associated value is an estimated quantity. (CF) Corrected final report.

*

* ANALYST

Y. J. L. J.

Sample Number: 399864
Project Code: TF-SED
Agency Number:
Date Collected: 07/20/2005
Time Collected: 0745
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: TS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 02/01/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		157	MG/KG	07/03/06	6200
Arsenic, Sediment		62	MG/KG	07/12/06	6010
Cadmium, XRF	J	1000	MG/KG	07/03/06	6200
Cadmium, Sediment		1070	MG/KG	07/12/06	6010
Lead, XRF		2110	MG/KG	07/03/06	6200
Lead, Sediment		883	MG/KG	07/12/06	6010
Zinc, XRF	>	7000	MG/KG	07/03/06	6200
Zinc, Sediment		33800	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

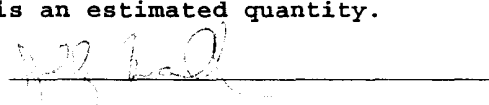
SAMPLERS COMMENTS:
PD1-02/SD01

SAMPLE RECEIVING COMMENTS:
SEL # 378882

ANALYST'S COMMENTS:
(CF) Corrected final report.
(J) The associated value is an estimated quantity.

*

* ANALYST



To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

Report of Analysis by Metals

EPA Drinking Water Certification #OK00013

CC: FILE COPY

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFACT

SAMPLERS COMMENTS:

PZ-04/SS04

SAMPLE RECEIVING COMMENTS:

SEL # 381331

ANALYST'S COMMENTS:

(J) The associated value is an estimated quantity. (CF) Corrected final report.

* ANALYST *[Signature]*

Sample Number: 399866
Project Code: TF-SED
Agency Number:
Date Collected: 07/19/2005
Time Collected: 1055
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		28	MG/KG	07/03/06	6200
Arsenic, Sediment		30	MG/KG	07/12/06	6010
Cadmium, XRF		27	MG/KG	07/12/06	6200
Cadmium , Sediment		27	MG/KG	07/12/06	6010
Lead, XRF		331	MG/KG	07/03/06	6200
Lead, Sediment		318	MG/KG	07/12/06	6010
Zinc, XRF		2450	MG/KG	07/03/06	6200
Zinc, Sediment		2320	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

SAMPLERS COMMENTS:

SMP-03/SD01CF

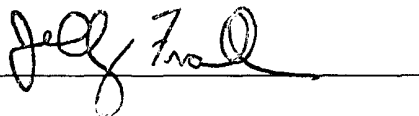
SAMPLE RECEIVING COMMENTS:

SEL # 378872

ANALYST`S COMMENTS:

*

* ANALYST



Sample Number: 399867
Project Code: TF-SED
Agency Number:
Date Collected: 07/28/2005
Time Collected: 1005
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	07/06/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	07/06/06	6200
Cadmium , Sediment		4	MG/KG	07/12/06	6010
Lead, XRF		105	MG/KG	07/06/06	6200
Lead, Sediment		96	MG/KG	07/12/06	6010
Zinc, XRF		909	MG/KG	07/06/06	6200
Zinc, Sediment		756	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

SAMPLERS COMMENTS:

SP-01/SS01

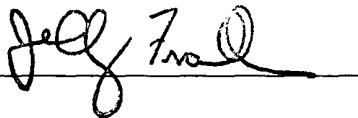
SAMPLE RECEIVING COMMENTS:

SEL # 380114

ANALYST`S COMMENTS:

*

* ANALYST



Sample Number: 399868
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0850
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		32	MG/KG	07/06/06	6200
Arsenic, Sediment		16	MG/KG	07/12/06	6010
Cadmium, XRF		24	MG/KG	07/06/06	6200
Cadmium, Sediment		20	MG/KG	07/12/06	6010
Lead, XRF		595	MG/KG	07/06/06	6200
Lead, Sediment		442	MG/KG	07/12/06	6010
Zinc, XRF		2420	MG/KG	07/06/06	6200
Zinc, Sediment		1770	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL&MANUFACTU

SAMPLERS COMMENTS:

SP-05/SS01

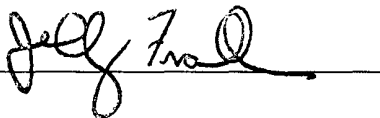
SAMPLE RECEIVING COMMENTS:

SEL # 380140

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399869
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1415
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	07/06/06	6200
Arsenic, Sediment		11	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	07/06/06	6200
Cadmium , Sediment	<	1	MG/KG	07/12/06	6010
Lead, XRF	<	20	MG/KG	07/06/06	6200
Lead, Sediment		20	MG/KG	07/12/06	6010
Zinc, XRF		62	MG/KG	07/06/06	6200
Zinc, Sediment		43	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFACT

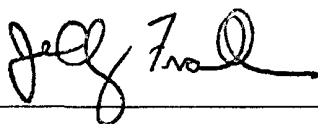
SAMPLERS COMMENTS:
SP-18/SS03

SAMPLE RECEIVING COMMENTS:
SEL # 380182

ANALYST`S COMMENTS:

*

* ANALYST



Sample Number: 399870
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 0930
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10	MG/KG	07/06/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF		13	MG/KG	07/06/06	6200
Cadmium, Sediment		14	MG/KG	07/12/06	6010
Lead, XRF		135	MG/KG	07/06/06	6200
Lead, Sediment		115	MG/KG	07/12/06	6010
Zinc, XRF		1730	MG/KG	07/06/06	6200
Zinc, Sediment		1330	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

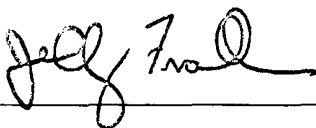
SAMPLERS COMMENTS:
SP-22/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 380149

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399871
Project Code: TF-SED
Agency Number:
Date Collected: 07/29/2005
Time Collected: 1100
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	07/06/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF		11	MG/KG	07/06/06	6200
Cadmium , Sediment		8	MG/KG	07/12/06	6010
Lead, XRF	<	20	MG/KG	07/06/06	6200
Lead, Sediment		18	MG/KG	07/12/06	6010
Zinc, XRF		919	MG/KG	07/06/06	6200
Zinc, Sediment		727	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

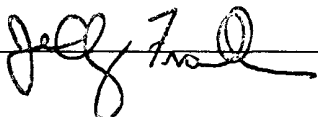
SAMPLERS COMMENTS:
SP-25/SS02

SAMPLE RECEIVING COMMENTS:
SEL # 380163

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399872
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1050
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		258	MG/KG	07/06/06	6200
Arsenic, Sediment		57	MG/KG	07/12/06	6010
Cadmium, XRF		139	MG/KG	07/06/06	6200
Cadmium , Sediment		92	MG/KG	07/12/06	6010
Lead, XRF		3980	MG/KG	07/06/06	6200
Lead, Sediment		2870	MG/KG	07/12/06	6010
Zinc, XRF	>	7000	MG/KG	07/06/06	6200
Zinc, Sediment		17300	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

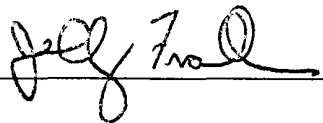
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-36/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 380218

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 399873
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1518
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		90	MG/KG	07/06/06	6200
Arsenic, Sediment		25	MG/KG	07/12/06	6010
Cadmium, XRF		36	MG/KG	07/06/06	6200
Cadmium , Sediment		30	MG/KG	07/12/06	6010
Lead, XRF		1470	MG/KG	07/06/06	6200
Lead, Sediment		1200	MG/KG	07/12/06	6010
Zinc, XRF		2750	MG/KG	07/06/06	6200
Zinc, Sediment		2220	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-46/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 380240

ANALYST`S COMMENTS:

* * ANALYST 

Sample Number: 399874
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1654
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		58	MG/KG	07/06/06	6200
Arsenic, Sediment		17	MG/KG	07/12/06	6010
Cadmium, XRF		77	MG/KG	07/06/06	6200
Cadmium , Sediment		57	MG/KG	07/12/06	6010
Lead, XRF		956	MG/KG	07/06/06	6200
Lead, Sediment		742	MG/KG	07/12/06	6010
Zinc, XRF		2170	MG/KG	07/06/06	6200
Zinc, Sediment		1700	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-53/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 380264

ANALYST`S COMMENTS:

* * ANALYST 

Sample Number: 399875
Project Code: TF-SED
Agency Number:
Date Collected: 08/01/2005
Time Collected: 1654
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: BDS
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		46	MG/KG	07/07/06	6200
Arsenic, Sediment		14	MG/KG	07/12/06	6010
Cadmium, XRF		65	MG/KG	07/07/06	6200
Cadmium , Sediment		54	MG/KG	07/12/06	6010
Lead, XRF		773	MG/KG	07/07/06	6200
Lead, Sediment		587	MG/KG	07/12/06	6010
Zinc, XRF		2070	MG/KG	07/07/06	6200
Zinc, Sediment		1480	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

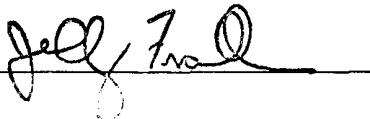
SAMPLERS COMMENTS:
SP-1014/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 380265

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 399876
Project Code: TF-SED
Agency Number:
Date Collected: 07/27/2005
Time Collected: 1531
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	07/03/06	6200
Arsenic, Sediment	<	10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	07/03/06	6200
Cadmium , Sediment	<	1	MG/KG	07/12/06	6010
Lead, XRF	<	20	MG/KG	07/03/06	6200
Lead, Sediment		10	MG/KG	07/12/06	6010
Zinc, XRF		71	MG/KG	07/03/06	6200
Zinc, Sediment		35	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

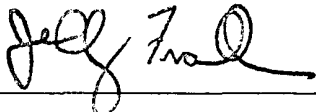
Metals

SOURCE: TULSA FUEL& MANUFAC

SAMPLERS COMMENTS:
TR-13/SS03

SAMPLE RECEIVING COMMENTS:
SEL # 379600

ANALYST'S COMMENTS:

* * ANALYST 

Sample Number: 399877
Project Code: TF-SED
Agency Number:
Date Collected: 08/29/2005
Time Collected: 1645
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		39	MG/KG	07/03/06	6200
Arsenic, Sediment		22	MG/KG	07/12/06	6010
Cadmium, XRF		15	MG/KG	07/03/06	6200
Cadmium , Sediment		13	MG/KG	07/12/06	6010
Lead, XRF		575	MG/KG	07/03/06	6200
Lead, Sediment		440	MG/KG	07/12/06	6010
Zinc, XRF		1860	MG/KG	07/03/06	6200
Zinc, Sediment		1380	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

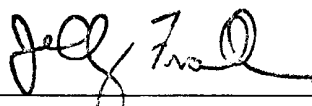
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-10/SS01

SAMPLE RECEIVING COMMENTS:
SEL # 382569

ANALYST'S COMMENTS:

* ANALYST 

Sample Number: 399878
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2005
Time Collected: 1107
Date Received: 06/23/2006
Date Completed: 07/13/2006
Collected By: DSB
PWS Id:
Location Code: S60
Station:
Facility:
Report Date: 07/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		13	MG/KG	07/03/06	6200
Arsenic, Sediment		10	MG/KG	07/12/06	6010
Cadmium, XRF	<	10	MG/KG	07/03/06	6200
Cadmium , Sediment		3	MG/KG	07/12/06	6010
Lead, XRF		165	MG/KG	07/03/06	6200
Lead, Sediment		132	MG/KG	07/12/06	6010
Zinc, XRF		631	MG/KG	07/03/06	6200
Zinc, Sediment		431	MG/KG	07/12/06	6010

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL& MANUFAC

SAMPLERS COMMENTS:

TSL-04/SS01

SAMPLE RECEIVING COMMENTS:

SEL # 382584

ANALYST'S COMMENTS:

* ANALYST 

Sieve #60 Study

XRF QC
Data

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
BLANKS**

6200 XRF ANALYSIS

Batch ID: 063006st399854-399861
SEL Sample Range: 399854 to 399861
Date of Analysis: 6/30/2006
Matrix: sed
Concentration Units: mg/kg

Analyte	Reporting Limit (PQL)	Instrument Blank		
		Initial	2	3
Arsenic	10	<		
Cadmium	10	<		
Lead	20	<		
Zinc	50	<		

A less than symbol (<) indicates the value was not detected above the associated method reporting limit.

Blank Acceptance Limits

Laboratory: No detections above method reporting limit

COMMENTS:

Instrument blanks are analyzed at run initiation and at the frequency of 1 per 20 samples or less if batch size is <20 samples.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 063006st399854-399861
 SEL Sample Range: 399854 to 399861
 Date of Analysis: 6/30/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	541	86.4
Cadmium	21.8	21	96.3
Lead	5532	5710	103.2
Zinc	6952	6650	95.7

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	103	98.1
Cadmium	41.7	40	95.9
Lead	1162	1210	104.1
Zinc	350.4	334	95.3

	% Recovery	
	Limits ¹	Upper RPD
		Limits ²
Laboratory:	80-120%	20%
Project DQIs:	80-120%	<35%

LCS: NIST source not used in calibration.

COMMENTS:

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
BLANKS**

6200 XRF ANALYSIS

Batch ID: 070306st399862-399872
SEL Sample Range: 399862 to 399872
Date of Analysis: 7/3/2006
Matrix: sed
Concentration Units: mg/kg

Analyte	Reporting Limit (PQL)	Instrument Blank		
		Initial	2	3
Arsenic	10	<		
Cadmium	10	<		
Lead	20	<		
Zinc	50	<		

A less than symbol (<) indicates the value was not detected above the associated method reporting limit.

Blank Acceptance Limits

Laboratory: No detections above method reporting limit

COMMENTS:

Instrument blanks are analyzed at run initiation and at the frequency of 1 per 20 samples or less if batch size is <20 samples.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 070306st399862-399872
SEL Sample Range: 399862 to 399872
Date of Analysis: 7/3/2006
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	545	87.1
Cadmium	21.8	21	96.3
Lead	5532	5740	103.8
Zinc	6952	6620	95.2

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	101	96.2
Cadmium	41.7	33	79.1
Lead	1162	1210	104.1
Zinc	350.4	346	98.7

	% Recovery	Upper RPD
	Limits ¹	Limits ²
Laboratory:	80-120%	20%
Project DQIs:	80-120%	<35%

LCS: NIST source not used in calibration.

COMMENTS:

Cadmium results for four samples associated with this batch analysis should be considered estimated values due to the final % recovery of the LCS 2 cadmium falling below analysis data quality control requirements. Sample numbers impacted are 399862-399865.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
BLANKS**

6200 XRF ANALYSIS

Batch ID: 070306stc399873-399878
SEL Sample Range: 399873 to 399878
Date of Analysis: 7/3/2006
Matrix: sed
Concentration Units: mg/kg

Analyte	Reporting Limit (PQL)	Instrument Blank		
		Initial	2	3
Arsenic	10	<		
Cadmium	10	<		
Lead	20	<		
Zinc	50	<		

A less than symbol (<) indicates the value was not detected above the associated method reporting limit.

Blank Acceptance Limits

Laboratory: No detections above method reporting limit

COMMENTS:

Instrument blanks are analyzed at run initiation and at the frequency of 1 per 20 samples or less if batch size is <20 samples.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 070306stc399873-399878
 SEL Sample Range: 399873 to 399878
 Date of Analysis: 7/3/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	544	86.9
Cadmium	21.8	20.6	94.5
Lead	5532	5710	103.2
Zinc	6952	6580	94.6

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	101	96.2
Cadmium	41.7	43	103.1
Lead	1162	1200	103.3
Zinc	350.4	346	98.7

% Recovery Limits ¹ Laboratory: 80-120% Project DQIs: 80-120%	Upper RPD Limits ² 20% <35%
---	---

LCS: NIST source not used in calibration.

COMMENTS:

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
BLANKS**

6200 XRF ANALYSIS

Batch ID: 070606st399867-399874
SEL Sample Range: 399867 to 399874
Date of Analysis: 7/6/2006
Matrix: sed
Concentration Units: mg/kg

Analyte	Reporting Limit (PQL)	Instrument Blank		
		Initial	2	3
Arsenic	10	<		
Cadmium	10	<		
Lead	20	<		
Zinc	50	<		

A less than symbol (<) indicates the value was not detected above the associated method reporting limit.

Blank Acceptance Limits
Laboratory: No detections above method reporting limit

COMMENTS:

Instrument blanks are analyzed at run initiation and at the frequency of 1 per 20 samples or less if batch size is <20 samples.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 070606st399867-399874
 SEL Sample Range: 399867 to 399874
 Date of Analysis: 7/6/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	538	85.9
Cadmium	21.8	22	100.9
Lead	5532	5630	101.8
Zinc	6952	6650	95.7

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	98	93.3
Cadmium	41.7	37	88.7
Lead	1162	1220	105.0
Zinc	350.4	335	95.6

	% Recovery	Upper RPD
	Limits ¹	Limits ²
Laboratory:	80-120%	20%
Project DQIs:	80-120%	<35%

LCS: NIST source not used in calibration.

COMMENTS:

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
BLANKS**

6200 XRF ANALYSIS

Batch ID: 070706gag399875
SEL Sample Range: 399875 to
Date of Analysis: 7/7/2006
Matrix: sed
Concentration Units: mg/kg

Analyte	Reporting Limit (PQL)	Instrument Blank		
		Initial	2	3
Arsenic	10	<		
Cadmium	10	<		
Lead	20	<		
Zinc	50	<		

A less than symbol (<) indicates the value was not detected above the associated method reporting limit.

Blank Acceptance Limits

Laboratory: No detections above method reporting limit

COMMENTS:

Instrument blanks are analyzed at run initiation and at the frequency of 1 per 20 samples or less if batch size is <20 samples.

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: 070706gag399875
 SEL Sample Range: 399875 to
 Date of Analysis: 7/7/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	548	87.5
Cadmium	21.8	19	87.2
Lead	5532	5600	101.2
Zinc	6952	6450	92.8

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	97	92.4
Cadmium	41.7	41	98.3
Lead	1162	1200	103.3
Zinc	350.4	346	98.7

	% Recovery	
	Limits ¹	Upper RPD
Laboratory:	80-120%	Limits ²
Project DQIs:	80-120%	20%
		<35%

LCS: NIST source not used in calibration.

COMMENTS:

Sieve #60 Study
ICP Qc
Data

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 399854 to 399878
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 7/12/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	Initial		Final	7/11/2006		
		1	2	3	1	2	3
Arsenic	< 10	<	<		<		
Cadmium	< 1	<	<		<		
Lead	< 10	<	<		<		
Zinc	< 12	<	<		<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

TFM-0002851

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 399854 to 399878
 Project Code: TF-SED
 Date of Analysis: 7/12/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	984	98.4	994	99.4	1.0%
Cadmium	1000	981	98.1	979	97.9	0.2%
Lead	1000	961	96.1	1000	100.0	4.0%
Zinc	1000	1000	100.0	983	98.3	1.7%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 399854 to 399878
 Project Code: TF-SED
 Date of Analysis: 7/12/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	5010	100.2	5110	102.2	2.0%
Cadmium	5000	4860	97.2	5070	101.4	4.2%
Lead	5000	4880	97.6	5070	101.4	3.8%
Zinc	5000	4990	99.8	4930	98.6	1.2%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

**Oklahoma SEL
May 2006 Event
Aqueous Samples**

Oklahoma SEL
Analytical Data
May 2006
Aqueous Samples

STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

PROJECT NAME

Tulsa Fuel- Phase I

SEL SECTION REPORTING

General Chemistry/Metals

The narrative and indicated attachments apply to the following SEL samples.

SEL SAMPLE CROSS-REFERENCE

	SEL PROJECT CODE	TF-SED	TF-LIQ	
	SAMPLING SITE DESIGNATOR ¹	SEL SAMPLE #	SEL SAMPLE #	COLLECT. DATE
1)	MSR-03/SW02		397335	08-May-06
2)	MSR-02/SW02		397336	08-May-06
3)	MSR-1000/SW02; FIELD DUPLICATE		397337	08-May-06
4)	MSR-01/SW02		397338	08-May-06
5)	OFF-09/SW02		397339	09-May-06
6)	OFF-20/SW01		397340	09-May-06
7)	OFF-19/SW01		397341	09-May-06
8)	OFF-16/SW01		397342	09-May-06
9)	OFF-17/SW01		397343	09-May-06
10)	OFF-18/SW01		397344	09-May-06
11)	OFF-10/SW02		397345	09-May-06
12)	OFF-14/SW01		397346	09-May-06
13)	OFF-1001/SW01; FIEL DUPLICATE		397347	09-May-06
14)	OFF-15/SW01		397348	09-May-06
15)	PD5-01/SW02		397425	10-May-06
16)	CST-01/SW01; USE SAMPLE FOR MS/MSD		397426	10-May-06
17)	PD4-01/SW02; USE SAMPLE FOR MS/MSD		397427	10-May-06
18)	PD1-02/SW02		397428	10-May-06
19)	PD1-1000/SW02; FIELD DUPLICATE		397429	10-May-06
20)	OFF-08/SW02		397430	10-May-06
21)	OFF-07/SW02		397431	10-May-06
22)	OFF-05/SW02		397432	10-May-06
23)	OFF-06/SW02		397433	10-May-06
24)	OFF-013/SW02		397434	10-May-06

STATE ENVIRONMENTAL LABORATORY
707 N. Robinson, P.O. Box 1077, Oklahoma City, OK 73101-1677
(405) 702-1000

STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

25)	OFF-012/SW02		397435	10-May-06
26)	OFF-011/SW02		397436	10-May-06
27)	OFF-04/SW02		397437	10-May-06
28)	OFF-02/SW02		397438	10-May-06
29)	OFF-03/SW02		397439	10-May-06
30)	OFF-01/SW02		397440	10-May-06
31)	MW01/GW02; FIELD FILTERED		397441	10-May-06
32)	MW-03/GW02; FIELD FILTERED		397542	12-May-06
33)	MW-1001/GW02; FIELD FILTERED; FIELD DUPLICATE		397543	12-May-06
34)	MW-04/GW02; FIELD FILTERED; USE FOR MS/MSD		397544	12-May-06
35)	MW-02/GW02; FIELD FILTERED		397545	12-May-06
36)	RW-01/GW02; FIELD FILTERED		397548	12-May-06


¹-Sampling site information is recorded in the "Sampler's Comments" field of each SEL sample which corresponds to the chain of custody "Sample Designator" column.

PACKAGE ATTACHMENTS

1. Copy of the corresponding chain of custody form(s)
2. Final analytical reports
3. Indicated quality control:

QUALITY CONTROL

GENERAL CHEMISTRY/METALS	
<input checked="" type="checkbox"/>	200.7- Total metals
<input checked="" type="checkbox"/>	Blanks summary
<input checked="" type="checkbox"/>	Laboratory control sample (LCS)
<input checked="" type="checkbox"/>	Fortified blank (LFB) & Matrix spikes (MS/MSD)
<input type="checkbox"/>	


STATE ENVIRONMENTAL LABORATORY
 707 N. Robinson, P.O. Box 1077, Oklahoma City, OK 73101-1677
 (405) 702-1000
... for a clean, attractive, prosperous Oklahoma

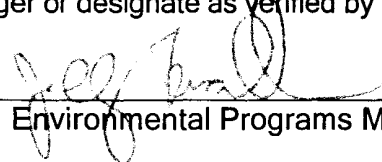
STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

COMMENTS

No MS/MSD was performed on sample 397356.

The release of the data contained in this hardcopy data package has been authorized by the SEL Section Programs Manager or designate as verified by the following signature.

Signature


Environmental Programs Manager

Date

June 22, 2006


STATE ENVIRONMENTAL LABORATORY
707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677
(405) 702-1000
... for a clean, attractive, prosperous Oklahoma

Sample Number: 397335
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1758
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		184.	UG/L	06/14/06	200.7
Lead, Total		20.0	UG/L	06/14/06	200.7
Zinc, Total		8250	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

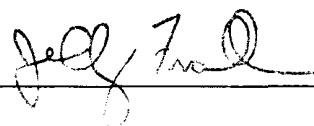
SAMPLERS COMMENTS:
MSR-03/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397336
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1831
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

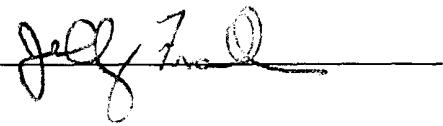
LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		72.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		3170	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****MSR-02/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST

Sample Number: 397337
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1831
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		73.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		3200	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-1000/SW02; FIELD DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397338
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1850
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		82.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		2860	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

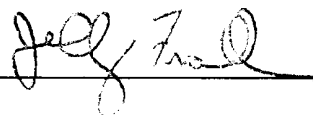
SAMPLERS COMMENTS:
MSR-01/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397339
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 0945
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		51.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		2500	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL& MANUFACT**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-09/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397340
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1000
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		9.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		653	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-20/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 397341
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1115
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		625	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

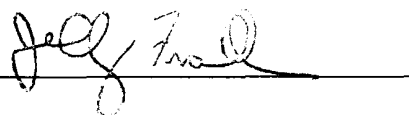
SAMPLERS COMMENTS:
OFF-19/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397342
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1150
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		20.	UG/L	06/14/06	200.7
Lead, Total		12.0	UG/L	06/14/06	200.7
Zinc, Total		1160	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

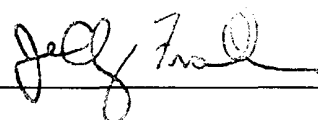
SAMPLERS COMMENTS:
OFF-16/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397343
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1240
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		447	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

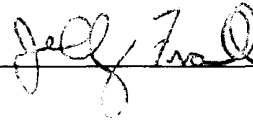
SAMPLERS COMMENTS:
OFF-17/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397344
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1305
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total		11.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		59	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

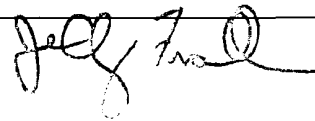
SAMPLERS COMMENTS:
OFF-18/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____



Sample Number: 397345
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1335
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		20.	UG/L	06/14/06	200.7
Lead, Total		11.0	UG/L	06/14/06	200.7
Zinc, Total		1170	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

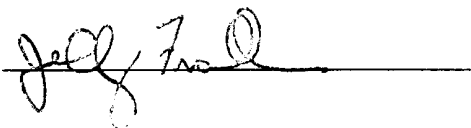
SAMPLERS COMMENTS:
OFF-10/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397346
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1440
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		30.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		607	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

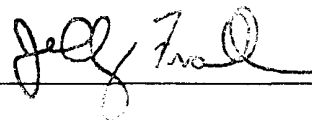
SAMPLERS COMMENTS:
OFF-14/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397347
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1440
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		28.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		583	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

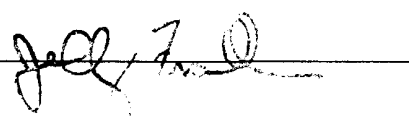
SAMPLERS COMMENTS:
OFF-1001/SW01; FIEL DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST



Sample Number: 397348
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1515
Date Received: 05/10/2006
Date Completed: 06/19/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		198.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		8390	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-15/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397425
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 0800
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

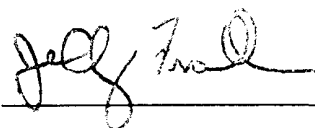
LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		261	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****PD5-01/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST

Sample Number: 397426
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 0905
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		260	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****CST-01/SW01; USE SAMPLE FOR MS/MSD****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397427
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1024
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		16.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		1080	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****PD4-01/SW02; USE SAMPLE FOR MS/MSD****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397428
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1122
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		32.	UG/L	06/14/06	200.7
Lead, Total		18.0	UG/L	06/14/06	200.7
Zinc, Total		1630	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-02/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST July 20

Sample Number: 397429
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1122
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		33.	UG/L	06/14/06	200.7
Lead, Total		18.0	UG/L	06/14/06	200.7
Zinc, Total		1680	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****PD1-1000/SW02; FIELD DUPLICATE****SAMPLE RECEIVING COMMENTS:****ANALYST`S COMMENTS:**

*

ANALYST 

Sample Number: 397430
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1220
Date Received: 05/12/2006
Date Completed: 06/19/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/19/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		79.	UG/L	06/14/06	200.7
Lead, Total		12.0	UG/L	06/14/06	200.7
Zinc, Total		3370	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-08/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs performing analysis on this Sample:

Gen. Chem. Metals

Sample Number: 397431
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1235
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		82.	UG/L	06/14/06	200.7
Lead, Total		15.0	UG/L	06/14/06	200.7
Zinc, Total		3420	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-07/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397432
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1307
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		80.	UG/L	06/14/06	200.7
Lead, Total		14.0	UG/L	06/14/06	200.7
Zinc, Total		3060	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-05/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397433
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1317
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		99.	UG/L	06/14/06	200.7
Lead, Total		13.0	UG/L	06/14/06	200.7
Zinc, Total		4210	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

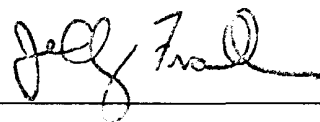
SAMPLERS COMMENTS:
OFF-06/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397434
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1340
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		849	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

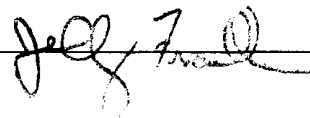
SAMPLERS COMMENTS:
OFF-013/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397435
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1400
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

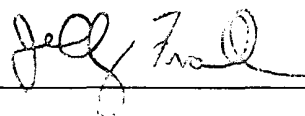
LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		51	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-012/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST

Sample Number: 397436
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1415
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total	<	5	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

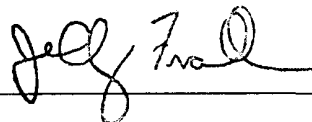
SAMPLERS COMMENTS:
OFF-011/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397437
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1443
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		88.	UG/L	06/14/06	200.7
Lead, Total		16.0	UG/L	06/14/06	200.7
Zinc, Total		3310	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

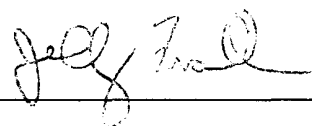
SAMPLERS COMMENTS:
OFF-04/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397438
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1457
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		91.	UG/L	06/14/06	200.7
Lead, Total		16.0	UG/L	06/14/06	200.7
Zinc, Total		3380	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-02/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397439
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1506
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		209	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****OFF-03/SW02****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST 

Sample Number: 397440
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1515
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		42	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

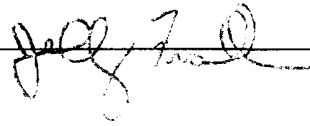
SAMPLERS COMMENTS:
OFF-01/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397441
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1137
Date Received: 05/12/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total	<	5	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

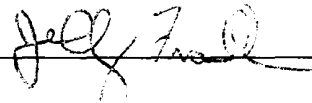
SAMPLERS COMMENTS:
MW01/GW02; FIELD FILTERED

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397542
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 0925
Date Received: 05/16/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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LAND PROTECTION DIVISION
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total	<	5	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

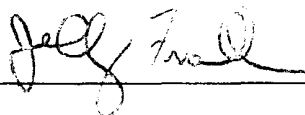
SAMPLERS COMMENTS:
MW-03/GW02; FIELD FILTERED

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397543
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 0925
Date Received: 05/16/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total	<	5	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

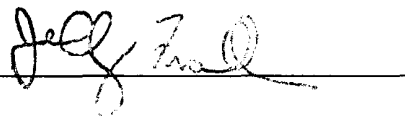
SAMPLERS COMMENTS:
MW-1001/GW02; FIELD FILTERED;FIELD DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397544
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1040
Date Received: 05/16/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total		64.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		2830	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

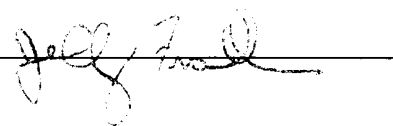
SAMPLERS COMMENTS:
MW-04/GW02; FIELD FILTERED; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST



Sample Number: 397545
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1415
Date Received: 05/16/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		25	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA **CITY:** COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MW-02/GW02; FIELD FILTERED

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397548
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1800
Date Received: 05/16/2006
Date Completed: 06/20/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/20/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY****707 N. ROBINSON****OKLAHOMA CITY****OKLAHOMA, 73102-6010**

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Arsenic, Total	<	10.0	UG/L	06/14/06	200.7
Cadmium, Total	<	5.	UG/L	06/14/06	200.7
Lead, Total	<	10.0	UG/L	06/14/06	200.7
Zinc, Total		126	UG/L	06/14/06	200.7

SOURCE: TULSA FUEL & MANUFAC**PROGRAM:****COUNTY: TULSA CITY: COLLINSVILLE****LEGAL DESCRIPTION:****/4 /4 /4 SEC: T: R: M:****SAMPLERS COMMENTS:****RW-01/GW02; FIELD FILTERED****SAMPLE RECEIVING COMMENTS:****ANALYST'S COMMENTS:**

*

ANALYST **Labs performing analysis on this Sample:**

Metals

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-LIQ
 SEL Sample Range: 397335 to 397548
 Preparation Blank Matrix: liquid
 Concentration Units: ug/l
 Date of Analysis 6/14/2006
 Method: 200.7

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	5/24/2006	5/24/2006	5/25/2006
Arsenic	< 10	<	<	<	<	<	<
Cadmium	< 5	<	<	<	<	<	<
Lead	< 10	<	<	<	<	<	<
Zinc	< 5	<	<	<	<	<	<

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 397335 to 397548
 Project Code: TF-LIQ
 Date of Analysis: 6/14/2006
 Concentration Units: ug/l
 Reference Source: SPEX Std 21 lot# 29-124AS 2/15/2007
 Method: 200.7

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	1018	101.8	1011	101.1	0.7%
Cadmium	1000	986	98.6	972	97.2	1.4%
Lead	1000	1017	101.7	1005	100.5	1.2%
Zinc	1000	1029	102.9	999	99.9	3.0%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 6/14/2006
 SEL Sample Range: 397335 to 397426 SEL Sample # **397426**
 MS/MSD Matrix: liquid
 Method: 200.7
 Project Code: TF-LIQ
 Concentration Units: ug/l

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	200	206	103.0	85 - 115	0	209	101.5	209	101.5	101.5	75 - 125	0.0	20%
Cadmium	200	203	101.5	85 - 115	0	203	100.0	203	100.0	100.0	75 - 125	0.0	20%
Lead	200	204	102.0	85 - 115	0	204	100.0	203	99.5	99.8	75 - 125	0.5	20%
Zinc	200	203	101.5	85 - 115	260	462	99.5	460	98.5	99.0	75 - 125	0.4	20%

COMMENTS:

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 6/14/2006
 SEL Sample Range: 397427 to 397548 SEL Sample # **397427**
 MS/MSD Matrix: liquid
 Method: 200.7
 Project Code: TF-LIQ
 Concentration Units: ug/l

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate								
	Spike	LFB	LFB	%Rec	Sample	MS	MS	MSD	MSD	MS/MSD	RPA	MS/MSD	RPD	
	Conc.	Result	%Rec.	Limits	Conc.	Result	%Rec. ¹	Result	%Rec. ¹	%Rec	Limits	RPD	Limit	
Arsenic	200	206	103.0	85 - 115	0	210	101.9	209	101.5	101.7	75 - 125	0.5	20%	
Cadmium	200	203	101.5	85 - 115	16	216	98.5	216	98.5	98.5	75 - 125	0.0	20%	
Lead	200	204	102.0	85 - 115	0	205	100.5	205	100.5	100.5	75 - 125	0.0	20%	
Zinc	200	203	101.5	85 - 115	1077	1265	92.6	1268	94.1	93.3	75 - 125	0.2	20%	

COMMENTS:

Form 2 Rev. 07/05



Request for Chemical Analysis and Chain of Custody Record

SHIPMENT IN
3 COOLERS

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 050906A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis ICP (As, Cd, Pb, Zn), Inorganic General Chemistry METALS (As, Cd, Pb, Zn)	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	MSR-03	SW02		2006	—	—	05/03/06	1758	X			3	X X	397335
	MSR-02	SW02		2006	—	—	05/03/06	1831	X			3	X X	397336
	MSR-1000	SW02		2006	—	—	05/03/06	1831	X			3	X X	397337
	MSR-01	SW02		2006	—	—	05/03/06	1850	X			3	X X	397338
	OFF-09	SW02		2006	—	—	05/09/06	0945	X			3	X X	397339
	OFF-20	SW01		2006	—	—	05/04/06	1000	X			3	X X	397340
	OFF-20	SD01		2006	0	0.5	05/04/06	1015		X		1		397349
	OFF-19	SW01		2006	—	—	05/04/06	1115	X			3	X X	397341
	OFF-19	SD01		2006	0	0.25	05/04/06	1130		X		1		397350
	OFF-16	SW01		2006	—	—	05/04/06	1150	X			3	X X	397342
	OFF-16	SD01		2006	0	0.25	05/04/06	1200		X		1		397351
	OFF-17	SW01		2006	—	—	05/04/06	1240	X			3	X X	397343
	OFF-17	SD01		2006	0	0.5	05/04/06	1250		X		1		397352
	OFF-18	SW01		2006	—	—	05/04/06	1305	X			3	X X	397344
	OFF-18	SD01		2006	0	0.25	05/04/06	1315		X		1		397353

Sampler (signature):

Sampler (signature):

Special Instructions: DEQ AM GEORGE THOMAS
GENERAL CHEMISTRY, ALKALINITY, CO2, CHLORIDE,
NITRATE, NITROGEN, SULFATE, TOC

Relinquished By (signature):

1.

Date/Time

05/09/06
2:00

Received By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

*SHIPMENT IN
3 COOLERS*

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ-SEL

Address: 787 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 0511064

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	PD5-01	SW02		2006	—	—	05/10/06	0800	X			3	X X X	397425
	CST-01	SW01		2006	—	—	05/10/06	0905	X			9	X X X	USE FOR MS/MSD 397426
	PD4-01	SW02		2006	—	—	05/10/06	1024	X			9	X X X	USE FOR MS/MSD 397427
	PD1-02	SW02		2006	—	—	05/10/06	1122	X			3	X X X	397428
	PD1-1000	SW02		2006	—	—	05/10/06	1122	X			3	X X X	397429
	OFF-08	SW02		2006	—	—	05/10/06	1220	X			3	X X X	397430
	OFF-07	SW02		2006	—	—	05/10/06	1235	X			3	X X X	397431
	OFF-05	SW02		2006	—	—	05/10/06	1307	X			3	X X X	397432
	OFF-06	SW02		2006	—	—	05/10/06	1317	X			3	X X X	397433
	OFF-13	SW02		2006	—	—	05/10/06	1340	X			3	X X X	397434
	OFF-12	SW02		2006	—	—	05/10/06	1400	X			3	X X X	397435
	OFF-11	SW02		2006	—	—	05/10/06	1415	X			3	X X X	397436
	OFF-04	SW02		2006	—	—	05/10/06	1443	X			3	X X X	397437
	OFF-02	SW02		2006	—	—	05/10/06	1457	X			3	X X X	397438
	OFF-03	SW02		2006	—	—	05/10/06	1506	X			3	X X X	397439

Sampler (signature):

Sampler (signature):

Special Instructions: DEQ PM: GEORGE THOMAS
GENERAL CHEMISTRY - ALKALINITY, CO₃, CHLORIDE,
NITRATE AS NITROGEN, SULFATE, TOC

Relinquished By (signature):

1.

Date/Time

05/11/06
2:30

Received By (signature):

Date/Time

5/12/06 13:33

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

Laboratory Comments:

Request for Chemical Analysis and Chain of Custody Record

d * SHIPMENT IN *
3 COOLERS *

[illegible]



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: **TRACY COOLEY**

Project Number: 36478

Client Name: DEQ - TFM

Laboratory: DEQ - SEL

Address: 707 N. ROBERTSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 051506A

Lab. Reference No. or Episode No.:

Number of Containers

Analysis

Analysis
of $(AsCl_4)_2$ ligands
General Chemistry

Sample Type

Matrix

Remarks

[illegible]

amplifier (signature):

Sampler (signature):

Special Instructions: DEQRM, GEORGETOWN, MS
GENERAL CHEMISTRY: ALKALINITY, CO₂, CHLORIDE,
NITRATE AS NITROGEN, SULFATE, TOL

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By *(signature)*:

Date/Time

Laboratory Comments:

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		13.9	MG/L	05/17/06	410.3
Alkalinity, Total		50.5	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N		2.62	MG/L	05/12/06	353.2
Total Organic Carbon		4.53	MG/L	05/15/06	5310 C
Chloride		15.6	MG/L	05/16/06	325.2
Sulfate		109.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-03/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

★

ANALYST

82.70

Sample Number: 397336
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1831
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		24.8	MG/L	05/17/06	410.3
Alkalinity, Total		66.9	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		8.60	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		57.9	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-02/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397337
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1831
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		28.3	MG/L	05/17/06	410.3
Alkalinity, Total		66.5	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		8.74	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		57.6	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-1000/SW02; FIELD DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 397338
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/08/2006
Time Collected: 1850
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		25.8	MG/L	05/17/06	410.3
Alkalinity, Total		61.7	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		7.73	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		54.8	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MSR-01/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 397339
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 0945
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		23.8	MG/L	05/17/06	410.3
Alkalinity, Total		83.6	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		7.37	MG/L	05/15/06	5310 C
Chloride		10.0	MG/L	05/16/06	325.2
Sulfate		211.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-09/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Sample Number: 397340
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1000
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		49.2	MG/L	05/17/06	410.3
Alkalinity, Total		72	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		15.30	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		47.0	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-20/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 397341
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1115
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		36.8	MG/L	05/17/06	410.3
Alkalinity, Total		80.6	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		11.80	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		44.4	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-19/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 397342
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1150
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		31.3	MG/L	05/17/06	410.3
Alkalinity, Total		66.6	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		10.00	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		57.2	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-16/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		54.6	MG/L	05/17/06	410.3
Alkalinity, Total		63.7	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		15.70	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		33.0	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-17/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

ANALYST

Sample Number: 397344
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1305
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		83	MG/L	05/17/06	410.3
Alkalinity, Total		162	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		23.90	MG/L	05/15/06	5310 C
Chloride		19.9	MG/L	05/16/06	325.2
Sulfate		60.2	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL& MANUFACT
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-18/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

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ANALYST _____

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OKLAHOMA, 73102-6010
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		84	MG/L	05/17/06	410.3
Alkalinity, Total		65.1	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		10.40	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		55.9	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-10/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		25.3	MG/L	05/17/06	410.3
Alkalinity, Total		62.9	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		26.50	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		50.1	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-14/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 397347
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1440
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		83	MG/L	05/17/06	410.3
Alkalinity, Total		56.8	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N		0.33	MG/L	05/12/06	353.2
Total Organic Carbon		26.30	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		41.9	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-1001/SW01; FIEL DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST

Sample Number: 397348
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1515
Date Received: 05/10/2006
Date Completed: 06/12/2006
Collected By: OSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		27.8	MG/L	05/17/06	410.3
Alkalinity, Total		272	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/12/06	353.2
Total Organic Carbon		10.10	MG/L	05/15/06	5310 C
Chloride		11.5	MG/L	05/16/06	325.2
Sulfate		555.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-15/SW01

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

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ANALYST

Sample Number: 397426
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 0905
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		47.2	MG/L	05/17/06	410.3
Alkalinity, Total		244	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		13.10	MG/L	05/15/06	5310 C
Chloride		16.4	MG/L	05/16/06	325.2
Sulfate		75.4	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
CST-01/SW01; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

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STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		45.9	MG/L	05/18/06	410.3
Alkalinity, Total		84.5	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/18/06	353.2
Total Organic Carbon		14.90	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		73.4	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD4-01/SW02; USE SAMPLE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST

Sample Number: 397428
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1122
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		33	MG/L	05/18/06	410.3
Alkalinity, Total		68.6	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		9.66	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		57.1	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-02/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 397429
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1122
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		32.5	MG/L	05/18/06	410.3
Alkalinity, Total		69.7	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		9.56	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		56.7	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
PD1-1000/SW02; FIELD DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 397430
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1220
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		27.7	MG/L	05/18/06	410.3
Alkalinity, Total		80.6	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		9.25	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		183.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-08/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

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* ANALYST

Sample Number: 397432
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1307
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		27.7	MG/L	05/18/06	410.3
Alkalinity, Total		84.8	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N		0.11	MG/L	05/16/06	353.2
Total Organic Carbon		8.23	MG/L	05/15/06	5310 C
Chloride		10.0	MG/L	05/16/06	325.2
Sulfate		205.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-05/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397433
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1317
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		28.7	MG/L	05/18/06	410.3
Alkalinity, Total		75.8	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		10.40	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		166.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-06/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397434
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1340
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

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PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		12	MG/L	05/18/06	410.3
Alkalinity, Total		54.4	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		4.48	MG/L	05/15/06	5310 C
Chloride		11.4	MG/L	05/16/06	325.2
Sulfate		445.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-013/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397435
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1400
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		14.8	MG/L	05/18/06	410.3
Alkalinity, Total		82.2	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		4.78	MG/L	05/15/06	5310 C
Chloride		13.4	MG/L	05/16/06	325.2
Sulfate		369.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-012/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 397436
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1415
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		19.6	MG/L	05/18/06	410.3
Alkalinity, Total		147	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		7.49	MG/L	05/15/06	5310 C
Chloride		10.0	MG/L	05/16/06	325.2
Sulfate		293.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-011/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397437
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1443
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		27.2	MG/L	05/18/06	410.3
Alkalinity, Total		85.2	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N		0.14	MG/L	05/16/06	353.2
Total Organic Carbon		7.22	MG/L	05/15/06	5310 C
Chloride		10.0	MG/L	05/16/06	325.2
Sulfate		219.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-04/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST _____

Sample Number: 397438
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1457
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		24.9	MG/L	05/18/06	410.3
Alkalinity, Total		77.9	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N		0.16	MG/L	05/16/06	353.2
Total Organic Carbon		7.01	MG/L	05/15/06	5310 C
Chloride		10.0	MG/L	05/16/06	325.2
Sulfate		218.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-02/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397439
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1506
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		22.5	MG/L	05/18/06	410.3
Alkalinity, Total		227	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		6.80	MG/L	05/15/06	5310 C
Chloride		11.6	MG/L	05/16/06	325.2
Sulfate		345.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-03/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 397440
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/10/2006
Time Collected: 1515
Date Received: 05/12/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		40.2	MG/L	05/18/06	410.3
Alkalinity, Total		183	MG/L	05/15/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/16/06	353.2
Total Organic Carbon		13.10	MG/L	05/15/06	5310 C
Chloride	<	10.0	MG/L	05/16/06	325.2
Sulfate		30.5	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
OFF-01/SW02

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Sample Number: 397545
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1415
Date Received: 05/16/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)	<	5	MG/L	05/19/06	410.3
Alkalinity, Total		308	MG/L	05/18/06	310.2
Nitrogen, Nitrate as N		0.58	MG/L	05/17/06	353.2
Total Organic Carbon		0.66	MG/L	05/22/06	5310 C
Chloride		598.	MG/L	05/19/06	325.2
Sulfate		1420.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MW-02/GW02; FIELD FILTERED

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST _____

Sample Number: 397546
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1415
Date Received: 05/16/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)	<	5	MG/L	05/19/06	410.3
Alkalinity, Total		301	MG/L	05/18/06	310.2
Nitrogen, Nitrate as N		0.51	MG/L	05/17/06	353.2
Total Organic Carbon		0.60	MG/L	05/22/06	5310 C
Chloride		578.	MG/L	05/19/06	325.2
Sulfate		1400.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MW-1000/GW02; FIELD DUPLICATE

SAMPLE RECEIVING COMMENTS:

ANALYST`S COMMENTS:

*

ANALYST 

Sample Number: 397547
Project Code: TF-LIQ
Agency Number:
Date Collected: 05/12/2006
Time Collected: 1503
Date Received: 05/16/2006
Date Completed: 06/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 06/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.

LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC:FILE COPY

PARAMETER NAME	QUALIFIER	VALUE	UNITS	ANALYZED	METHOD
Chemical Oxygen Demand (High)		6	MG/L	05/19/06	410.3
Alkalinity, Total		223	MG/L	05/18/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	05/17/06	353.2
Total Organic Carbon		0.67	MG/L	05/22/06	5310 C
Chloride		28.3	MG/L	05/19/06	325.2
Sulfate		1840.	MG/L	05/22/06	375.4

SOURCE: TULSA FUEL & MANUFAC
PROGRAM:
COUNTY: TULSA CITY: COLLINSVILLE

LEGAL DESCRIPTION:
/4 /4 /4 SEC: T: R: M:

SAMPLERS COMMENTS:
MW-05/GW02; USE FOR MS/MSD

SAMPLE RECEIVING COMMENTS:

ANALYST'S COMMENTS:

*

ANALYST 

Labs performing analysis on this Sample:
Gen. Chem.

**State Environmental Laboratory/General Chemistry
QUALITY CONTROL PERFORMANCE REPORT**

June 20, 2006

Project Name: Tulsa Fuel
ODEQ Project Code: TF -LIQ
Matrix: Liquid
Units: mg/L

Initial Comments:

This report pertains to the following sample sets analyzed by the General Chemistry Section:

397335-397440 collected May 8-10, 2006

397545-397547 collected May 12, 2006.

In addition to the Quality Control Performance Report for the analytical data, this packet also includes copies of the original chain of custodies and the final reports.

Run days and batch sizes may differ between parameters and methods.

The date of analysis and SEL Sample Range are specific to each parameter and method throughout this entire report.

Laboratory Blanks

Analyte	Method	PQL	Blank	Date of Analysis	SEL Sample Range
COD 1	410.2	5	<	5/17/06	397335-397426
COD 2	410.2	5	<	5/18/06	397427-397440
COD 3	410.2	5	<	5/19/06	397545-397547
T Alkalinity 1	310.2	10	<	5/15/06	397335-397440
T Alkalinity 2	310.2	10	<	5/18/06	397545-397547
Nitrate-Nitrite as N 1	353.2	0.1	<	5/12/06	397335-397348
Nitrate-Nitrite as N 2	353.2	0.1	<	5/16/06	397425-397440
Nitrate-Nitrite as N 3	353.2	0.1	<	5/17/06	397427-397547
Chloride 1	325.2	10	<	5/16/06	397335-397440
Chloride 2	325.2	10	<	5/19/06	397545-397547
Sulfate 1	375.4	10	<	5/22/06	397335-397547
TOC 1	5310C	0.5	<	5/15/06	397335-397440
TOC 2	5310C	0.5	<	5/22/06	397545-397547

Analyte	Spike Conc.	Laboratory Fortified Blank		
		LFB Result	LFB %Rec.	%Rec Limits
COD 1	25	27.1	108.4	85 - 115
COD 2	25	25.3	101.2	85 - 115
COD 3	25	21.6	86.4	85 - 115
T Alkalinity 1	100	96.7	96.7	90 - 110
T Alkalinity 2	100	99.0	99.0	90 - 110
Nitrate-Nitrite as N 1	4	4.07	101.8	90 - 110
Nitrate-Nitrite as N 2	0.4	0.39	97.5	90 - 110
Nitrate-Nitrite as N 3	0.4	0.38	95.0	90 - 110
Chloride 1	50	52.9	105.8	90 - 110
Chloride 2	50	52.6	105.2	90 - 110
Sulfate 1	60	54.6	91.0	90 - 110
TOC 1	4	3.91	97.8	85 - 115
TOC 2	4	3.93	98.3	85 - 115

Laboratory Control Sample

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
COD 1	60	62.1	103.5	63.1	105.2	1.6
COD 2	60	61.2	102.0	64.1	106.8	4.6
COD 3	60	63.9	106.5	65.4	109.0	2.3
T Alkalinity 1	200	199	99.5	199	99.5	0.0
T Alkalinity 2	200	199	99.5	200	100	0.5
Nitrate-Nitrite as N 1	2.0	2.04	102.0	2.08	104.0	1.9
Nitrate-Nitrite as N 2	0.2	0.21	103.5	0.22	110.0	4.5
Nitrate-Nitrite as N 3	2.0	2.07	103.5	2.03	101.5	2.0
Chloride 1	250	254	101.6	247	98.8	2.9
Chloride 2	250	252	100.8	250	100.0	0.8
Sulfate 1	250	246	98.4	228	91.2	7.6
TOC 1	2	1.91	95.5	1.98	99.0	3.6
TOC 2	2	1.95	97.5	2.00	100.0	2.5

Upper RPD

Control

Limits²: 10%

Control Limits¹: 90-110%

Matrix Duplicate and Matrix Spike

397426

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	47.2	43.7	45.5	7.7	25	64.5	69.2*
T Alkalinity	244	244	244	0.0	100	334	90.0
Nitrate-Nitrite as N	<0.05	<0.05	<0.05	0.0	0.4	0.45	106.3
Chloride	16.4	16.4	16.4	0.0	50	71.3	109.8
Sulfate	75.4	75.3	75.4	0.1	60	127	86.0
TOC	13.1	13.5	13.3	3.0	4	17.6	112.5

Matrix Duplicate and Matrix Spike

397427

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	45.9	49.7	47.8	7.9	25	70.9	100.0
T Alkalinity	84.5	83.6	84.1	1.1	100	175	90.5
Nitrate-Nitrite as N	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Chloride	4.8	5.1	5.0	6.0	50	56.5	103.0
Sulfate	73.4	74.1	73.8	0.9	60	124	84.3
TOC	14.9	15.0	15.0	0.7	4	19.0	102.5

Matrix Duplicate and Matrix Spike

397547

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	6	5	5.5	18.2	50	47.4	82.8
T Alkalinity	223	225	224	0.9	100	284	61.0*
Nitrate-Nitrite as N	0.26	0.27	0.265	3.8	0.4	0.65	97.5
Chloride	28.3	28.6	28.5	1.1	50	84.1	111.6
Sulfate	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TOC	0.69	0.71	0.7	2.9	4	4.6	97.8

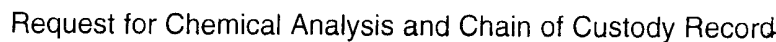
Upper RPD Control Limits: 10%

% Recovery Limits 80-120

Comments:

For measured sample concentrations < PQL, the value of ½ the PQL is routinely used to calculate accuracy and precision with minimum bias.

* Matrix interference



Laboratory: DEQ -SEL
Address: 707 N. ROBINSON
City/State/Zip: OKLAHOMA CITY, OK 73102
Telephone: 405 702 1113

Lab. Reference No. or Episode No.:

Project Number: 36078

Sample Type

Client Name: DEW-TFM

Matrix

Sampler (*signature*):

Sampler (signature):

Special Instructions: DEQ M. GEORGE THOMAS
GENERAL CHEMISTRY, FORMALITY, CO. 10.12.
NITRATE, NITROGEN SULFATE, TO

Relinquished By (signature) _____

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. Paul H. ...
Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY OK 73102

Telephone: 405 702 1113

Document Control No: 050900

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: REG - TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number Contained	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
TFM	OFF-10	SW02		2006	—	—	05/29/06	1335	X			3	X X
	OFF-14	SW01		2006	—	—	05/04/06	1440	X			3	X X
	OFF-14	SD01		2006	0	0.25	05/02/06	1455		X		1	X X
	OFF-1001	SW01		2006	—	—	05/04/06	1440	X			3	X X
	OFF-1001	SD01		2006	0	0.25	05/04/06	1455		X		1	X X
	OFF-15	SW01		2006	—	—	05/04/06	1515	X			3	X X
	OFF-15	SD01		2006	0	0.5	05/04/06	1525		X		6	X X X

Sampler (*signature*):

Sampler (signature):

Special Instructions: OER PM: GEORGE THOMAS
GENERAL CHEMISTRY: ALKALINITY, CO₂ CHLORIDE
URATE IS UPON URIC ACID. TRC

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt: _____

[Handwritten signature]

05/04/20

Yes ☒ No ☐

Relinquished By *(signature)*.

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

*SHIPMENT IN
3 COOLERS*

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 0511064

Lab. Reference No. or Episode No.:

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers					Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time									
TFM	P05-01	SW02		2006	—	—	05/10/06	0800	X			3	X	X			397425
	CST-01	SW01		2006	—	—	05/10/06	0905	X			9	X	X			USE FOR MS/MSD 397426
	P04-01	SW02		2006	—	—	05/10/06	1024	X			9	X	X			USE FOR MS/MSD 397427
	P01-02	SW02		2006	—	—	05/10/06	1122	X			3	X	X			397428
	P01-1000	SW02		2006	—	—	05/10/06	1122	X			3	X	X			397429
	OFF-08	SW02		2006	—	—	05/10/06	1220	X			3	X	X			397430
	OFF-07	SW02		2006	—	—	05/10/06	1235	X			3	X	X			397431
	OFF-05	SW02		2006	—	—	05/10/06	1307	X			3	X	X			397432
	OFF-06	SW02		2006	—	—	05/10/06	1317	X			3	X	X			397433
	OFF-13	SW02		2006	—	—	05/10/06	1340	X			3	X	X			397434
	OFF-12	SW02		2006	—	—	05/10/06	1400	X			3	X	X			397435
	OFF-11	SW02		2006	—	—	05/10/06	1415	X			3	X	X			397436
	OFF-04	SW02		2006	—	—	05/10/06	1443	X			3	X	X			397437
	OFF-02	SW02		2006	—	—	05/10/06	1457	X			3	X	X			397438
	OFF-03	SW02		2006	—	—	05/10/06	1506	X			3	X	X			397439

Sampler (signature):

Sampler (signature):

Special Instructions: DEQ PM: GEORGE THOMAS
GENERAL CHEMISTRY: ALKALINITY, CO₃, CHLORIDE,
NITRATE AS NITROGEN, SULFATE, TOC

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

TFM-0002942



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: *DEQ - SEL*

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY OK 73102

Telephone: 405 702 1113

Document Control No: 051506A

Lab. Reference No. or Episode No.:

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ - TFM

Matrix

[illegible]

amplifier (signature):

Sampler (signature):

Special Instructions: SEQR PM GEORGETOWN
GENERAL CHEMISTRY: AMALGAM, CO, CHLORINE
NITRATE AS NITROGEN SULFATE, TC

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

TFM-0002944

**Oklahoma SEL
May 2006 Event
Sediment Samples**

Oklahoma SEL
Analytical Data
TFM
May 2006 Sediment Samples

Sample Number: 397349
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1015
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		34	MG/KG	06/29/06	6200
Cadmium, XRF		31	MG/KG	06/29/06	6200
Lead, XRF		468	MG/KG	06/29/06	6200
Zinc, XRF		2940	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OFF-20/SD01

ANALYST'S COMMENTS:



* * ANALYST _____

Sample Number: 397350
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1130
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		157	MG/KG	06/29/06	6200
Cadmium, XRF		40	MG/KG	06/29/06	6200
Lead, XRF		1980	MG/KG	06/29/06	6200
Zinc, XRF	>	7000	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-19/SD01

ANALYST'S COMMENTS:

July 10

* * ANALYST _____

Sample Number: 397351
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1200
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		197	MG/KG	06/29/06	6200
Cadmium, XRF		215	MG/KG	06/29/06	6200
Lead, XRF		3120	MG/KG	06/29/06	6200
Zinc, XRF	>	7000	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-16/SD01

ANALYST'S COMMENTS:

Handwritten signature/initials

* * ANALYST _____

Sample Number: 397352
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1250
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		15	MG/KG	06/29/06	6200
Cadmium, XRF	<	10	MG/KG	06/29/06	6200
Lead, XRF		220	MG/KG	06/29/06	6200
Zinc, XRF		872	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OFF-17/SD01

ANALYST'S COMMENTS:



* * ANALYST _____

Sample Number: 397353
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1315
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	20	MG/KG	06/29/06	6200
Cadmium, XRF	<	10	MG/KG	06/29/06	6200
Lead, XRF		119	MG/KG	06/29/06	6200
Zinc, XRF		699	MG/KG	06/26/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-18/SD01

ANALYST'S COMMENTS:



* * ANALYST _____

Sample Number: 397354
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1455
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		214	MG/KG	06/29/06	6200
Cadmium, XRF		362	MG/KG	06/29/06	6200
Lead, XRF		3710	MG/KG	06/29/06	6200
Zinc, XRF	>	7000	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-14/SD01

ANALYST'S COMMENTS:



* * ANALYST _____

Sample Number: 397355
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1455
Date Received: 05/10/2006
Date Completed: 07/03/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/03/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		307	MG/KG	06/29/06	6200
Cadmium, XRF		615	MG/KG	06/29/06	6200
Lead, XRF		5080	MG/KG	06/29/06	6200
Zinc, XRF	>	7000	MG/KG	06/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-1001/SD01; FIEL DUPLICATE

ANALYST'S COMMENTS:



*

* ANALYST

Sample Number: 397356
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1525
Date Received: 05/10/2006
Date Completed: 07/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 07/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
GEORGE THOMAS, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		341	MG/KG	06/29/06	6200
Cadmium (TCLP)		1080	UG/L	07/10/06	6010
Arsenic (TCLP)	<	50	UG/L	07/10/06	6010
Arsenic, Sediment		39	MG/KG	05/24/06	6010
Cadmium, XRF		268	MG/KG	06/29/06	6200
Cadmium , Sediment		53	MG/KG	05/24/06	6010
Lead, XRF	>	5500	MG/KG	05/24/06	6200
Lead, Sediment		1820	MG/KG	05/24/06	6010
Zinc, XRF	>	7000	MG/KG	06/29/06	6200
Zinc, Sediment		7280	MG/KG	05/24/06	6010
Lead (TCLP)		2690	UG/L	07/10/06	6010
% Solids		66.2	%	06/07/06	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OFF-15/SD01; USE FOR MS/MSD AND CONFIRMATION

ANALYST'S COMMENTS:

*

* ANALYST 

STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

*Sediment
+
QC*

PROJECT NAME

Tulsa Fuel-

SEL SECTION REPORTING

General Chemistry/Metals

The narrative and indicated attachments apply to the following SEL samples.

SEL SAMPLE CROSS-REFERENCE

	SEL PROJECT CODE	TF-SED	TF-LIQ	
	SAMPLING SITE DESIGNATOR ¹	SEL SAMPLE #	SEL SAMPLE #	COLLECT. DATE
1)	MSR-03/SW02		397335	08-May-06
2)	MSR-02/SW02		397336	08-May-06
3)	MSR-1000/SW02; FIELD DUPLICATE		397337	08-May-06
4)	MSR-01/SW02		397338	08-May-06
5)	OFF-09/SW02		397339	09-May-06
6)	OFF-20/SW01		397340	09-May-06
7)	OFF-19/SW01		397341	09-May-06
8)	OFF-16/SW01		397342	09-May-06
9)	OFF-17/SW01		397343	09-May-06
10)	OFF-18/SW01		397344	09-May-06
11)	OFF-10/SW02		397345	09-May-06
12)	OFF-14/SW01		397346	09-May-06
13)	OFF-1001/SW01; FIEL DUPLICATE		397347	09-May-06
14)	OFF-15/SW01		397348	09-May-06
15)	PD5-01/SW02		397425	10-May-06
16)	CST-01/SW01; USE SAMPLE FOR MS/MSD		397426	10-May-06
17)	PD4-01/SW02; USE SAMPLE FOR MS/MSD		397427	10-May-06
18)	PD1-02/SW02		397428	10-May-06
19)	PD1-1000/SW02; FIELD DUPLICATE		397429	10-May-06
20)	OFF-08/SW02		397430	10-May-06
21)	OFF-07/SW02		397431	10-May-06
22)	OFF-05/SW02		397432	10-May-06
23)	OFF-06/SW02		397433	10-May-06
24)	OFF-013/SW02		397434	10-May-06

STATE ENVIRONMENTAL LABORATORY

707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677

(405) 702-1000

STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

25)	OFF-012/SW02		397435	10-May-06
26)	OFF-011/SW02		397436	10-May-06
27)	OFF-04/SW02		397437	10-May-06
28)	OFF-02/SW02		397438	10-May-06
29)	OFF-03/SW02		397439	10-May-06
30)	OFF-01/SW02		397440	10-May-06
31)	MW01/GW02; FIELD FILTERED		397441	10-May-06
32)	MW-03/GW02; FIELD FILTERED		397542	12-May-06
33)	MW-1001/GW02; FIELD FILTERED; FIELD DUPLICATE		397543	12-May-06
34)	MW-04/GW02; FIELD FILTERED; USE FOR MS/MSD		397544	12-May-06
35)	MW-02/GW02; FIELD FILTERED		397545	12-May-06
36)	RW-01/GW02; FIELD FILTERED		397548	12-May-06

¹-Sampling site information is recorded in the "Sampler's Comments" field of each SEL sample which corresponds to the chain of custody "Sample Designator" column.

PACKAGE ATTACHMENTS

1. Copy of the corresponding chain of custody form(s)
2. Final analytical reports
3. Indicated quality control:

QUALITY CONTROL

GENERAL CHEMISTRY/METALS	
<input type="checkbox"/>	200.7- Total metals
<input checked="" type="checkbox"/>	Blanks summary
<input checked="" type="checkbox"/>	Laboratory control sample (LCS)
<input checked="" type="checkbox"/>	Fortified blank (LFB) & Matrix spikes (MS/MSD)
<input type="checkbox"/>	


STATE ENVIRONMENTAL LABORATORY
 707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677
 (405) 702-1000

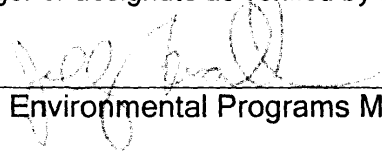
STATE ENVIRONMENTAL LABORATORY DATA PACKAGE NARRATIVE

COMMENTS

No MS/MSD was performed on sample 397356.

The release of the data contained in this hardcopy data package has been authorized by the SEL Section Programs Manager or designate as verified by the following signature.

Signature




Environmental Programs Manager

Date



June 12, 2006


STATE ENVIRONMENTAL LABORATORY
707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677
(405) 702-1000

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-LIQ
 SEL Sample Range: 397335 to 397548
 Preparation Blank Matrix: liquid
 Concentration Units: ug/l
 Date of Analysis 6/14/2006
 Method: 200.7

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	5/24/2006	5/24/2006	5/25/2006
Arsenic	< 10	<	<	<	<	<	<
Cadmium	< 5	<	<	<	<	<	<
Lead	< 10	<	<	<	<	<	<
Zinc	< 5	<	<	<	<	<	<

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 397335 to 397548
 Project Code: TF-LIQ
 Date of Analysis: 6/14/2006
 Concentration Units: ug/l
 Reference Source: SPEX Std 21 lot# 29-124AS 2/15/2007
 Method: 200.7

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	1018	101.8	1011	101.1	0.7%
Cadmium	1000	986	98.6	972	97.2	1.4%
Lead	1000	1017	101.7	1005	100.5	1.2%
Zinc	1000	1029	102.9	999	99.9	3.0%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 6/14/2006
 SEL Sample Range: 397335 to 397426 SEL Sample # **397426**
 MS/MSD Matrix: liquid
 Method: 200.7
 Project Code: TF-LIQ
 Concentration Units: ug/l

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	200	206	103.0	85 - 115	0	209	101.5	209	101.5	101.5	75 - 125	0.0	20%
Cadmium	200	203	101.5	85 - 115	0	203	100.0	203	100.0	100.0	75 - 125	0.0	20%
Lead	200	204	102.0	85 - 115	0	204	100.0	203	99.5	99.8	75 - 125	0.5	20%
Zinc	200	203	101.5	85 - 115	260	462	99.5	460	98.5	99.0	75 - 125	0.4	20%

COMMENTS:

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 6/14/2006
 SEL Sample Range: 397427 to 397548 SEL Sample # **397427**
 MS/MSD Matrix: liquid
 Method: 200.7
 Project Code: TF-LIQ
 Concentration Units: ug/l

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	200	206	103.0	85 - 115	0	210	101.9	209	101.5	101.7	75 - 125	0.5	20%
Cadmium	200	203	101.5	85 - 115	16	216	98.5	216	98.5	98.5	75 - 125	0.0	20%
Lead	200	204	102.0	85 - 115	0	205	100.5	205	100.5	100.5	75 - 125	0.0	20%
Zinc	200	203	101.5	85 - 115	1077	1265	92.6	1268	94.1	93.3	75 - 125	0.2	20%

COMMENTS:

State Environmental Laboratory/General Chemistry QUALITY CONTROL PERFORMANCE REPORT

June 20, 2006

Project Name: Tulsa Fuel
ODEQ Project Code: TF -LIQ
Matrix: Liquid
Units: mg/L

Initial Comments:

This report pertains to the following sample sets analyzed by the General Chemistry Section:

397335-397440 collected May 8-10, 2006

397545-397547 collected May 12, 2006.

In addition to the Quality Control Performance Report for the analytical data, this packet also includes copies of the original chain of custodies and the final reports.

Run days and batch sizes may differ between parameters and methods.

The date of analysis and SEL Sample Range are specific to each parameter and method throughout this entire report.

Laboratory Blanks

Analyte	Method	PQL	Blank	Date of Analysis	SEL Sample Range
COD 1	410.2	5	<	5/17/06	397335-397426
COD 2	410.2	5	<	5/18/06	397427-397440
COD 3	410.2	5	<	5/19/06	397545-397547
T Alkalinity 1	310.2	10	<	5/15/06	397335-397440
T Alkalinity 2	310.2	10	<	5/18/06	397545-397547
Nitrate-Nitrite as N 1	353.2	0.1	<	5/12/06	397335-397348
Nitrate-Nitrite as N 2	353.2	0.1	<	5/16/06	397425-397440
Nitrate-Nitrite as N 3	353.2	0.1	<	5/17/06	397427-397547
Chloride 1	325.2	10	<	5/16/06	397335-397440
Chloride 2	325.2	10	<	5/19/06	397545-397547
Sulfate 1	375.4	10	<	5/22/06	397335-397547
TOC 1	5310C	0.5	<	5/15/06	397335-397440
TOC 2	5310C	0.5	<	5/22/06	397545-397547

Laboratory Fortified Blank				
Analyte	Spike	LFB	LFB	%Rec
	Conc.	Result	%Rec.	Limits
COD 1	25	27.1	108.4	85 - 115
COD 2	25	25.3	101.2	85 - 115
COD 3	25	21.6	86.4	85 - 115
T Alkalinity 1	100	96.7	96.7	90 - 110
T Alkalinity 2	100	99.0	99.0	90 - 110
Nitrate-Nitrite as N 1	4	4.07	101.8	90 - 110
Nitrate-Nitrite as N 2	0.4	0.39	97.5	90 - 110
Nitrate-Nitrite as N 3	0.4	0.38	95.0	90 - 110
Chloride 1	50	52.9	105.8	90 - 110
Chloride 2	50	52.6	105.2	90 - 110
Sulfate 1	60	54.6	91.0	90 - 110
TOC 1	4	3.91	97.8	85 - 115
TOC 2	4	3.93	98.3	85 - 115

Laboratory Control Sample

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
COD 1	60	62.1	103.5	63.1	105.2	1.6
COD 2	60	61.2	102.0	64.1	106.8	4.6
COD 3	60	63.9	106.5	65.4	109.0	2.3
T Alkalinity 1	200	199	99.5	199	99.5	0.0
T Alkalinity 2	200	199	99.5	200	100	0.5
Nitrate-Nitrite as N 1	2.0	2.04	102.0	2.08	104.0	1.9
Nitrate-Nitrite as N 2	0.2	0.21	103.5	0.22	110.0	4.5
Nitrate-Nitrite as N 3	2.0	2.07	103.5	2.03	101.5	2.0
Chloride 1	250	254	101.6	247	98.8	2.9
Chloride 2	250	252	100.8	250	100.0	0.8
Sulfate 1	250	246	98.4	228	91.2	7.6
TOC 1	2	1.91	95.5	1.98	99.0	3.6
TOC 2	2	1.95	97.5	2.00	100.0	2.5

Upper RPD
Control
Limits²: 10%

Control Limits¹: 90-110%

Matrix Duplicate and Matrix Spike

397426

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	47.2	43.7	45.5	7.7	25	64.5	69.2*
T Alkalinity	244	244	244	0.0	100	334	90.0
Nitrate-Nitrite as N	<0.05	<0.05	<0.05	0.0	0.4	0.45	106.3
Chloride	16.4	16.4	16.4	0.0	50	71.3	109.8
Sulfate	75.4	75.3	75.4	0.1	60	127	86.0
TOC	13.1	13.5	13.3	3.0	4	17.6	112.5

Matrix Duplicate and Matrix Spike

397427

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	45.9	49.7	47.8	7.9	25	70.9	100.0
T Alkalinity	84.5	83.6	84.1	1.1	100	175	90.5
Nitrate-Nitrite as N	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Chloride	4.8	5.1	5.0	6.0	50	56.5	103.0
Sulfate	73.4	74.1	73.8	0.9	60	124	84.3
TOC	14.9	15.0	15.0	0.7	4	19.0	102.5

Matrix Duplicate and Matrix Spike

397547

Analyte	Sample Conc.	MD	Mean Conc.	RPD	Spike Level	MS Result	MS % Rec
COD	6	5	5.5	18.2	50	47.4	82.8
T Alkalinity	223	225	224	0.9	100	284	61.0*
Nitrate-Nitrite as N	0.26	0.27	0.265	3.8	0.4	0.65	97.5
Chloride	28.3	28.6	28.5	1.1	50	84.1	111.6
Sulfate	n/a	n/a	n/a	n/a	n/a	n/a	n/a
TOC	0.69	0.71	0.7	2.9	4	4.6	97.8

Upper RPD Control Limits: 10%

% Recovery Limits 80-120

Comments:

For measured sample concentrations > PQL, the value of 1/2 the PQL is routinely used to calculate accuracy and precision with minimum bias.

* Matrix interference



Request for Chemical Analysis and Chain of Custody Record

SHIPMENT IN
3 COOLERS

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TROY COOLEY

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 050906A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Matrix			Number of Containers	Analysis TOP (As, Cd, Pb, Zn) Inorganic General Chemistry MRE (As, Cd, Pb, Zn)					Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time	Liquid	Solid	Gas							
TFM	MSR-03	SW02		2006	—	—	05/03/06	1758	X			3	X	X				397335
	MSR-02	SW02		2006	—	—	05/03/06	1831	X			3	X	X				397336
	MSR-1000	SW02		2006	—	—	05/03/06	1831	X			3	X	X				397337
	MSR-01	SW02		2006	—	—	05/03/06	1850	X			3	X	X				397338
	OFF-09	SW02		2006	—	—	05/04/06	0945	X			3	X	X				397339
	OFF-20	SW01		2006	—	—	05/04/06	1000	X			3	X	X				397340
	OFF-20	SD01		2006	0	0.5	05/04/06	1015		X		1			X			397349
	OFF-19	SW01		2006	—	—	05/04/06	1115	X			3	X	X				397341
	OFF-19	SD01		2006	0	0.25	05/04/06	1130		X		1			X			397350
	OFF-16	SW01		2006	—	—	05/04/06	1150	X			3	X	X				397342
	OFF-16	SD01		2006	0	0.25	05/04/06	1200		X		1			X			397351
	OFF-17	SW01		2006	—	—	05/04/06	1240	X			3	X	X				397343
	OFF-17	SD01		2006	0	0.5	05/04/06	1250		X		1			X			397352
	OFF-18	SW01		2006	—	—	05/04/06	1305	X			3	X	X				397344
	OFF-18	SD01		2006	0	0.25	05/04/06	1315		X		1			X			397353

ampler (signature):

Sampler (signature):

Special Instructions: DEQ RM GEORGE THOMAS
GENERAL CHEMISTRY, ALKALINITY, CO2 CHLORIDE,
NITRATE, NITROGEN, SULFATE, TOC

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

**Oklahoma SEL
May 2006 Event**

**ICP Analysis of Overcalibration XRF Data
Soil and Sediment Samples**

Oklahoma SEL

Analytical Data

ICP Analysis of Overcalibration XRF Data

Soil and Sediment Samples

TFM

**May 2006 Sediment Samples
RI Phase I Location TRB-09DW**

Sample Number: 411177
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2006
Time Collected: 1610
Date Received: 12/21/2006
Date Completed: 01/10/2007
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 01/10/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Sediment		538	MG/KG	12/27/06	6010
Lead, Sediment		8950	MG/KG	12/27/06	6010
Zinc, Sediment		25300	MG/KG	12/27/06	6010
% Solids		98.66	%	01/09/07	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

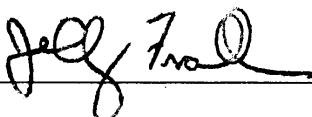
SAMPLERS COMMENTS:

TRB-09DW/GRAB; SEL # 382597

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 411178
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1455
Date Received: 12/21/2006
Date Completed: 01/10/2007
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 01/10/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		14400	MG/KG	12/27/06	6010
% Solids		54.11	%	01/09/07	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

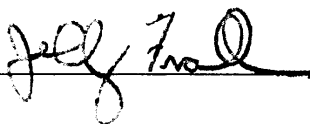
SAMPLERS COMMENTS:

OFF-1001/SD01;SEL # 397355

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 411179
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1455
Date Received: 12/21/2006
Date Completed: 01/10/2007
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 01/10/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		14800	MG/KG	12/27/06	6010
% Solids		67.02	%	01/09/07	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

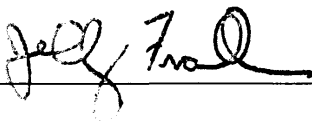
SAMPLERS COMMENTS:

OFF-14/SD01; SEL # 397354

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 411180
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1200
Date Received: 12/21/2006
Date Completed: 01/10/2007
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 01/10/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		10100	MG/KG	12/27/06	6010
% Solids		55.89	%	01/09/07	CLP 05.3

Labs performing analysis on this Sample:

Metals

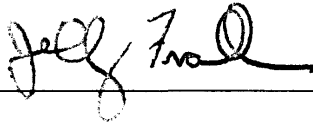
SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OFF-16/SD01; SEL # 397351

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 411181
Project Code: TF-SED
Agency Number:
Date Collected: 05/09/2006
Time Collected: 1130
Date Received: 12/21/2006
Date Completed: 01/10/2007
Collected By: DSB
PWS Id:
Location Code: OC
Station:
Facility:
Report Date: 01/10/2007

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Zinc, Sediment		6310	MG/KG	12/27/06	6010
% Solids		78.32	%	01/09/07	CLP 05.3

Labs performing analysis on this Sample:

Metals

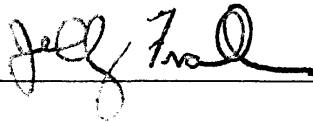
SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OFF-19/SD01; SEL# 397350

ANALYST'S COMMENTS:

*

* ANALYST



**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 411177 to 411181
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 12/27/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	Initial	Final		12/26/2006		
		1	2	3	1	2	3
Arsenic	< 10	<	<		<		
Cadmium	< 1	<	<		<		
Lead	< 10	<	<		<		
Zinc	< 12	<	<		<		

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 411177 to 411181
 Project Code: TF-SED
 Date of Analysis: 12/27/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	981	98.1	998	99.8	1.7%
Cadmium	1000	978	97.8	981	98.1	0.3%
Lead	1000	984	98.4	990	99.0	0.6%
Zinc	1000	1030	103.0	976	97.6	5.4%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP

SEL Sample Range: 411177 to 411181
 Project Code: TF-SED
 Date of Analysis: 12/27/2006
 Concentration Units: ppb
 Method: 6010

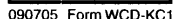
Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4930	98.6	5020	100.4	1.8%
Cadmium	5000	4900	98.0	5000	100.0	2.0%
Lead	5000	4850	97.0	4960	99.2	2.2%
Zinc	5000	4890	97.8	4650	93.0	5.0%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05



Record

Laboratory: _____
Address: _____
City, State, ZIP: _____
Telephone: _____

[illegible]

Attention: Mr. J. Edgar Hoover

Project Number: 07-03

Sample Tree

Client Name _____

Notes

Number of Containers:

[illegible]

Sampler (*signature*):

Sampler (signature):

Special Instructions: *Handwritten notes in cursive script.*

Relinquished By (signature):

Date/Time

Relinquished By (signature):

Date/Time

Ice Present in Container:
Yes No

Temperature Upon Receipt: _____

Relinquished By (signature):

Date/Time

Relinquished By signature

Date/Time

Laboratory Comments:

**Oklahoma SEL
RI Phase II Data**

Oklahoma SEL
Analytical Data
RI Phase II



STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

December 6, 2006

Tracy Cooley
Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114

Re: Tulsa Fuel & Manufacturing Phase II Data Results

Dear Mr. Cooley:

Enclosed is the hard copy of the Phase II data the Department of Environmental Quality Lab emailed electronically to Sharon Shelton on November 22, 2006 and November 28, 2006. Additionally, I have included the May 10, 1999 EPA fish data from Tulsa Fuel & Manufacturing.

If you have any questions feel free to contact me at (405) 702-5126 or via email at sara.downard@deq.state.ok.us.

Sincerely,

A handwritten signature in black ink, appearing to read "Sara Downard", is written over a horizontal line.

Sara Downard
Project Manager
Site Remediation Section
Land Protection Division

Enclosures



STATE ENVIRONMENTAL LABORATORY

DATA PACKAGE NARRATIVE

PROJECT NAME

Tulsa Fuel - Phase II

SEL SECTION REPORTING

General Chemistry/Metals

The narrative and indicated attachments apply to the following SEL samples.

TF-SED samples were collected August 18 - September 20, 2006 and submitted September 14 - 22, 2006. The SEL sample range of these samples is 404994-405891.

The final reports for the - samples were either MS/MSD, ICP Confirmation or TCLP was requested are separated with their own method specific quality control.

TF-LIQ samples were submitted on September 22, 2006. The sample range for these samples is 405873-405927. Samples 405919-927 were filtered prior to ICP analysis.

PACKAGE ATTACHMENTS

1. Copy of the corresponding chain of custody form(s)
2. Final analytical reports
3. Indicated quality control:

QUALITY CONTROL

GENERAL CHEMISTRY/METALS	
<input type="checkbox"/>	Soils 6010 - Metals by ICP/AES, TCLP - Metals 6200 - Metals by XRF Liquids Metals by 200.7 (ICP) COD by 410.3 Total Alkalinity by 310.2 Nitrate as N by 353.2 Chloride by 325.2 Sulfate by 375.4 TOC by 5310C
<input type="checkbox"/>	Blanks summary- Continuing cals. (CCB) & reagent (LRB)
<input type="checkbox"/>	Laboratory control sample summary - LCS
<input type="checkbox"/>	Calibration verification checks
<input type="checkbox"/>	Fortified blank (LFB) & spikes summary (MS/MSD)

STATE ENVIRONMENTAL LABORATORY
707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677
(405) 702-1000
For a clean, attractive, prosperous Oklahoma

STATE ENVIRONMENTAL LABORATORY

DATA PACKAGE NARRATIVE

COMMENTS:

All XRF preparations were done using a #60 sieve.

All ICP/6010 preparations (digestions) for total metals were made using the same dried aliquots used for XRF analysis. Therefore, it is not necessary to apply any type of moisture correction to the reported results for total metals. The % Solid data is provided only as a reference to the sample type and matrix and the starting point for the TCLP analysis.

In some cases, TF-SED samples were analyzed in batches that overlap field-sampling events.

XRF analysis required eleven separate instrument batches. All analysis was completed over a two-week period (September 29-October 11, 2006).

Soil ICP analysis (total metals) was completed in five separate digestions spanning three consecutive days (October 17-19, 2006). All these samples were analyzed at the instrument in a single batch on October 20, 2006.

TCLP analysis was completed in eight digestions over the course of four days (October 27, November 1, 8, and 15, 2006). All these samples were analyzed at the instrument in a single batch on November 16, 2006.

The summary reports for each QC marker correspond to the specified analytical batch.

All TF-LIQ samples were analyzed for metals in a single batch on the date indicated on the final reports. All General Chemistry liquid samples were also analyzed by method as a single batch.

Standard Reference Material for all Metals analysis:

Accutrace ICP Calibration Standards (element / lot # / expiration date)

As	B2065015	April 2007
Cd	B2125005	April 2007
Pb	B1075029	April 2007
Zn	B2115031	April 2007

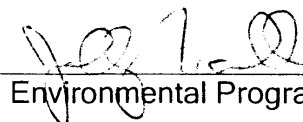
XRF Standard Reference Material

NIST 2710

NIST 2711

The release of the data contained in this hardcopy data package has been authorized by the SEL Section Programs Manager or designate as verified by the following signature.

Signature



Environmental Programs Manager

Date

Nov 20, 2006

STATE ENVIRONMENTAL LABORATORY

707 N. Robinson, P.O. Box 1677, Oklahoma City, OK 73101-1677

(405) 702-1000

for a clean, attractive, prosperous Oklahoma

Oklahoma SEL
Analytical Data
RI Phase II
Chain-of-Custody Documentation



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 091406A

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Number of Containers

Analysis
XRF (As, Cd, Pb, Zn)
ICP (As, Cd, Pb, Zn) * 10, 50, 200
TELD (As, Cd, Pb)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
TFM	SP-54	SS01		2006	0	0.5	08/10/06	1000	X			1 X	404994
	SP-54	SS02		2	0.5	2.0		1003	X			1 X	404995
	SP-55	SS01			0.5	0.5		1013	X			3 X X X	404996 USE FOR CONFIRMATION
	SP-1015	SS01			0	0.5		1013	X			3 X X X	404997 USE FOR CONFIRMATION
	SP-55	SS02			0.5	2.0		1025	X			1 X	404998
	SP-56	SS01			0	0.5		1030	X			1 X	404999
	SP-56	SS02			0.5	2.0		1034	X			1 X	405000
	SP-56	SS03			2.0	4.0		1038	X			1 X	405001
	SP-57	SS01			0	0.5		1042	X			1 X	405002
	SP-57	SS02			0.5	2.0		1046	X			1 X	405003
	SP-58	SS01			0	0.5		1051	X			1 X	405004
	SP-58	SS02			0.5	2.0		1057	X			1 X	405005
	SP-59	SS01			0	0.5		1103	X			1 X	405006
	SP-59	SS02			0.5	2.0		1106	X			1 X	405007
	SP-59	SS03			2.0	4.0		1108	X			1 X	405008

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. [Signature]

08/14/06 0850

[Signature]

08/14/06 0850

Yes ☐ No ☐

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

[Signature]

09/14/06

[Signature]

9/14/06 1532



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-9400 Fax: (816) 822-3494

Attention: TRACY COOLEY

Laboratory: DEQ-JEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY OK 73102

Telephone: 405 702 1113

Document Control No: 091406C

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

[illegible]

Sampler (signature): DAVID BARBER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:	<input type="checkbox"/>
---------------------------	--------------------------

Temperature Upon Receipt:	
---------------------------	--

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time:

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Document Control No: 091406B

Lab. Reference No. or Episode No.:

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	SP-60	SS01		2006	0	0.5	08/13/06	1113		X		6	X X X	405009 USE FOR CONFIRMATION, MS/MS, US
TFM	SP-60	SS02		2006	0.5	2.0	08/13/06	1118		X		1	X	405010
TFM	SP-1016	SS02		2006	0.5	2.0	08/13/06	1118		X		1	X	405011
	BG-SP-03	SS01			0	0.5	08/13/06	1030		X		1	X	405012
	BG-SP-03	SS02			0.5	2.0		1033		X		1	X	405013
	BG-SP-03	SS03			2.0	4.0		1036		X		1	X	405014
	BG-SP-04	SS01			0	0.5		1050		X		3	X X X	CONFIRMATION 405015
	BG-SP-04	SS02			0.5	2.0		1054		X		1	X	405016
	BG-SP-04	SS03			2.0	4.0		1100		X		1	X	405017
	BG-SP-05	SS01			0	0.5		1110		X		1	X	405018
	BG-SP-05	SS02			0.5	2.0		1113		X		1	X	405019
	BG-SP-1000	SS02			0.5	2.0		1113		X		1	X	405020
	BG-SP-05	SS03			2.0	4.0		1116		X		1	X	405021
	BG-SP-06	SS01			0	0.5		1130		X		1	X	405022
✓	BG-SP-06	SS02		✓	0.5	2.0	✓	1136		X		1	X	405023

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. [Signature]

09/14/06 08:50

Dennis [Signature]

09/14/06 08:50

Yes ☐ No ☐

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2. Dennis [Signature]

9/14/06 11:22

Tony [Signature]

9/14/06 11:30



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463		Laboratory: <u>DEQ-SEL</u>		Document Control No: <u>091406D</u>	
Address: <u>707 N. ROBINSON</u>		Lab. Reference No. or Episode No.:			
City/State/Zip: <u>OKLAHOMA CITY, OK 73102</u>		Telephone: <u>405 702 1113</u>			
Attention: <u>TRACY COOLEY</u>		Project Number: <u>36478</u>		Sample Type	
Client Name: <u>DEQ-TFM</u>		Matrix			
Sample Number		Sample Event		Sample Depth (in feet)	
Group or SWMU Name		Sample Point		Sample Designator	
Round		Year		From To	
Date		Time		Liquid Solid Gas	
TFM		OSL-100		SS01	
2006		0.25		09/22/06 1015	
OSL-100		SS02		0.25 1.0 1035	
OSL-101		SS01		0 0.25 1145	
OSL-101		SS02		0.25 1.0 1200	
OSL-1013		SS02		0.25 1.0 1334	
OSL-103		SS01		0 0.25 1319	
OSL-103		SS02		0.25 1.0 1334	
OSL-102		SS01		0 0.25 1430	
OSL-102		SS02		0.25 1.0 1445	
OSL-40A		SS02		0.25 1.0 09/24/06 0756	
OSL-40B		SS01		0 0.25 0849	
OSL-40B		SS02		0.25 1.0 0903	
OSL-1004		SS02		0.25 1.0 0903	
OSL-40C		SS01		0 0.25 0948	
OSL-40C		SS02		0.25 1.0 1012	
Sampler (signature): <u>DAVID BARKER</u>		Sampler (signature):		Special Instructions:	
Relinquished By (signature):		Date/Time		Received By (signature):	
1. <u>[Signature]</u>		09/14/06 0950		<u>[Signature]</u>	
Relinquished By (signature):		Date/Time		Received By (signature):	
<u>[Signature]</u>		9/14/06 1122		<u>[Signature]</u>	
Ice Present in Container:		Temperature Upon Receipt:		Laboratory Comments:	
Yes <input type="checkbox"/> No <input type="checkbox"/>				32	



Request for Chemical Analysis and Chain of Custody Record

Document Control No: 09/406F

Lab. Reference No. or Episode No.:

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ - TFM

Matrix

Number of Containers	Analysis										Remarks
	ME (As Cd Pb Zn)	TE (As Cd Pb Zn) + 9% SOLID	TE (As Cd Pb)								
1	X										405057
1	X										405058
1	X										405059
3	X	X	X								CONFIRMATION 405060
1	X										405061
1	X										405062
1	X										405063
1	X										405064
1	X										405065
6	X	X	X								CONFIRMATION 405066 MS/MSD
1	X										405067
1	X										405068
1	X										405069
1	X										405070
1	X										405071

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2. Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time



Request for Chemical Analysis and Chain of Custody Record

Document Control No: 091406G

Lab. Reference No. or Episode No.:

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Analysis
XRF (As, Cd, Hg, Pb, Zn)
TCLP (As, Cd, Hg, Pb, Zn)
TCLP (As, Cd, Hg, Pb, Zn)
TCLP (As, Cd, Hg, Pb, Zn)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
TFM	OSL-109	SS01		2006	0	0.25	08/31/06	1110		X		1 X	405072
	OSL-1014	SS01			0	0.25		1110		X		1 X	405073
	RG-OSL-05	SS01			0	0.25		1147		X		1 X	405074
	RG-OSL-07	SS01			0	0.25		1300		X		1 X	405075
	RG-OSL-1000	SS01			0	0.25		1300		X		1 X	405076
	OSL-111	SS01			0	0.25		1343		X		1 X	405077
	OSL-113	SS01			0	0.25		1420		X		3 X X X	CONFIRMATION 405078
	RG-OSL-04	SS01			0	0.25		1511		X		1 X	405079
	OSL-39A	SS02			0.25	1.0	09/01/06	0815		X		1 X	405080
	RG-OSL-03	SS01			0	0.25		1027		X		1 X	405081
	OSL-39B	SS01			0	0.25	09/05/06	1456		X		1 X	405082
	OSL-39B	SS02			0.25	1.0		1507		X		1 X	405083
	OSL-39C	SS01			0	0.25		1543		X		1 X	405084
	OSL-1007	SS01			0	0.25		1548		X		1 X	405085
	OSL-39C	SS02			0.25	1.0		1555		X		1 X	405086

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ - SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Document Control No: 091406H

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: DEQ - TFM

Matrix

Number of
Containers

Analysis

MS (As Cd Pb Zn)

ICP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

TECP (As Cd Pb Zn)

Remarks

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	OSL-39D	SS01		2006	0	0.25	09/06/06	1345		X		1	X	405087
	OSL-39D	SS02			0.25	1.0		1400		X		1	X	405088
	OSL-39E	SS01			0	0.25		1435		X		3	X X X	405089 CONFIRMATION
	OSL-39E	SS02			0.25	1.0		1450		X		1	X	LAB REP 405090
	OSL-12A	SS02			0.25	1.0	09/07/06	0854		X		1	X	405091
	OSL-12B	SS01			0	0.25		0920		X		1	X	405092
	OSL-12B	SS02			0.25	0.75		0930		X		1	X	405093
	OSL-12C	SS01			0	0.25		1016		X		1	X	405094
	OSL-12C	SS02			0.25	1.0		1025		X		1	X	405095
	OSL-12D	SS01			0	0.25		1059		X		1	X	405096
	OSL-12D	SS02			0.25	1.0		1110		X		1	X	405097
	OSL-12E	SS01			0	0.25		1138		X		1	X	405098
	OSL-1006	SS01			0	0.25		1138		X		1	X	405099
	OSL-12E	SS02			0.25	1.0		1149		X		3	X X X	CONFIRMATION 100
	TRB-10E	SS01			0	0.25		1210		X		1	X	405101

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. [Signature]

09/14/06

[Signature]

09/14/06

Yes ☐ No ☐

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2. [Signature]

9/14/06

[Signature]

9-14-06

13:32



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEYLaboratory: NEQ-SELAddress: 707 N. ROBINSONCity/State/Zip: OKLAHOMA CITY, OK 73102Telephone: 405 702 1113Document Control No: 291406I

Lab. Reference No. or Episode No.:

Project Number: 36478

Sample Type

Client Name: NEQ - TFM

Matrix

Number of Containers

Analysis

100% (A, C, D, Ph 2)
100% (A, C, D, Ph 2) + 9.5% S&D
100% (A, C, D, Ph 2)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
TFM	TRB-13E	SS02		2006	0.25	1.0	09/07/06	1320		X		1 X	405102
	TRB-13B	SS02			0.25	1.0		1320		X		1 X	405103
	TRB-10D	SS01			0	0.25		1350		X		1 X	405104
	TRB-10D	SS02			0.25	1.0		1400		X		1 X	405105
	TRB-10C	SS01			0	0.25		1440		X		1 X	405106
	TRB-10C	SS02			0.25	1.0		1450		X		1 X	405107
	TRB-10B	SS01			0	0.25		1519		X		1 X	405108
	TRB-10B	SS02			0.25	1.0		1532		X		1 X	405109
	TRB-10A	SS02			0.25	1.0	✓	1600		X		3 X X X	CONFIRMATION 405110
	TSL-05A	SS02			0.25	1.0	09/08/06	0843		X		3 X X X	CONFIRMATION 405111
	TSL-05B	SS01			0	0.25		0920		X		1 X	405112
	TSL-05B	SS02			0.25	1.0		0930		X		1 X	405113
	TSL-05C	SS01			0	0.25		1006		X		1 X	405114
	TSL-05C	SS02			0.25	1.0		1015		X		1 X	405115
✓	TSL-05D	SS01		✓	0	0.25	✓	1040		X		1 X	405116

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. David Barker

09/14/06 0950

Dennis I. Peters

09/14/06

Yes ☐ No ☐

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

2. Dennis I. Peters

9/14/06 1:40

Tracy Cooley

9-14-06 13:32



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: **TRACY COOLEY**

Laboratory: **DEQ-SEL**

Address: **707 N. ROBINSON**

City/State/Zip: **OKLAHOMA CITY, OK 73102**

Telephone: **405 702 1113**

Document Control No: **091406 J**

Lab. Reference No. or Episode No.:

Project Number: **36479**

Sample Type

Client Name: **DEQ-TFM**

Matrix

Analysis
XRF (As, Cd, Pb, Zn)
ICP (As, Cd, Pb, Zn) + 8, 5000
TCAP (As, Cd, Pb)

Number of Containers

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Remarks

Sample Number

Sample Event

Sample Depth
(in feet)

Sample
Collected

Group or
SWMU Name

Sample
Point

Sample
Designator

Round

Year

From

To

Date

Time

Liquid

Solid

Gas

TFM

TSL-050

SS02

2006-

0.25

1.0

09/09/06

1057

X

1

X

405117

TSL-1201

SS02

0.25

1.0

1057

X

1

X

405118

TSL-05E

SS01

0

0.25

1136

X

1

X

405119

TSL-09E

SS02

0.25

1.0

1144

X

1

X

405120

OSL-4900

SS01

0

0.25

09/09/06

0836

X

1

X

405121

OSL-4900

SS01

0

0.25

0902

X

1

X

405122

OSL-4800

SS01

0

0.25

1054

X

1

X

405123

OSL-4800

SS01

0

0.25

1128

X

1

X

405124

OSL-4000

SS01

0

0.25

1153

X

1

X

405125

OSL-116

SS01

0

0.25

1219

X

1

X

405126

Sampler (signature): **DAVID BARKER**

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:
Yes ☐ No ☐

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Document Control No: 091906A

Lab. Reference No. or Episode No.:

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Attention: TRACY COOLEY

Laboratory: DEQ-SEL

Address: 707 N. ROBINSON

City/State/Zip: OKLAHOMA CITY, OK 73102

Telephone: 405 702 1113

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Number of Containers

Analysis

Analysis
ICP (As, Cd, Pb, Zn)
ICP (As, Cd, Pb, Zn, Cr, Cu, Fe, Ni, Se, V)
ICP (As, Cd, Pb)

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time					
TFM	TRB-09A	SS02		2006	0.25	1.0	09/11/06	1512	X			1 X	405652
	TRB-09B	SS01			0	0.25		1530	X			6 X X X	405653 CONFIRMATION
	TRB-09B	SS02			0.25	1.0		1540	X			1 X	405654
	TRB-09E	SS01			0	0.25		1605	X			1 X	405655
	TRB-09E	SS02			0.25	1.0		1613	X			1 X	405656
	TRB-1002	SS01			0	0.25		1605	X			1 X	405657
	OSL-97D	SS02			0.25	1.0	09/12/06	0935	X			1 X	405658
	OSL-97C	SS02			0.25	1.0		1000	X			3 X X X	405659 CONFIRMATION
	OSL-97E	SS01			0	0.25		1025	X			1 X	405660
	OSL-97E	SS02			0.25	1.0		1035	X			1 X	405661
	OSL-97F	SS02			0.25	1.0		1055	X			1 X	405662
	OSL-1012	SS02			0.25	1.0		1055	X			1 X	405663
	OSL-97G	SS01			0	0.25		1120	X			1 X	405664
	OSL-97G	SS02			0.25	1.0		1130	X			1 X	405665
✓	TRB-09A	SS02		✓	0.25	1.0	✓	1200	X			1 X	405666

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Ice Present in Container:

Temperature Upon Receipt:

1. Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Yes ☐ No ☐

2. Relinquished By (signature):

Date/Time

Received By (signature):

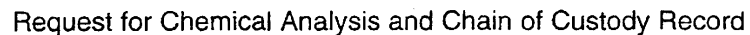
Date/Time

Laboratory Comments:



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: <u>TRACY COXLEY</u>		Laboratory: <u>BER-SEL</u>		Document Control No: <u>0919068</u>														
		Address: <u>707 N. ROBINSON</u>		Lab. Reference No. or Episode No.:														
		City/State/Zip: <u>OKLAHOMA CITY, OK 73102</u>		<div>Analysis XAF(A), Cd, Pb, Zn TCM(A), Cd, Pb, Zn TCL(A), Cd, Pb, Zn</div>														
		Telephone: <u>405 702 1113</u>																
Project Number: <u>36478</u>						Sample Type												
Client Name: <u>BER-TFM</u>						Matrix												
Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Remarks					
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time										
TFM	TAB-08A	SS01		2006	0	0.25	09/12/06	1218		X		3	X	X	X	405667 CONFIRMATION		
	TRB-1001	SS01			0	0.25		1218		X		3	X	X	X	405668 CONFIRMATION		
	TRB-08B	SS02			0.25	1.0		1228		X		1	X			405669		
	TRB-08C	SS01			0	0.25		1253		X		1	X			405670		
	TRB-08C	SS02			0.25	1.0		1258		X		1	X			405671		
	TRB-08E	SS01			0	0.25		1329		X		1	X			405672		
	TRB-08E	SS02			0.25	1.0		1338		X		1	X			405673		
	OSL-114	SS01			0	0.25		1309		X		1	X			405674		
	OSL-36A	SS02			0.25	1.0		1509		X		1	X			405675		
	OSL-36B	SS01			0	0.25		1536		X		1	X			405676		
	OSL-36B	SS02			0.25	1.0		1541		X		1	X			405677		
	OSL-36C	SS01			0	0.25		1558		X		3	X	X	X	405678 CONFIRMATION		
	OSL-36C	SS02			0.25	1.0		1610		X		1	X			405679		
	OSL-36D	SS01			0	0.25		1627		X		1	X			405680		
	OSL-36D	SS02			0.25	1.0		1637		X		1	X			405681		
	Sampler (signature): <u>DAVID BARKER</u>			Sampler (signature):						Special Instructions:								
Relinquished By (signature): <u>David Barker</u>			Date/Time: <u>09/19/06/355</u>		Received By (signature): <u>[Signature]</u>			Date/Time: <u>9-19-06/355</u>		Ice Present in Container: Yes <input type="checkbox"/> No <input type="checkbox"/>			Temperature Upon Receipt:					
Relinquished By (signature):			Date/Time:		Received By (signature): <u>Tammy Mayo</u>			Date/Time: <u>9-19-06/13:41</u>		Laboratory Comments:								



Laboratory: GER-SEL
Address: 707 N. ROBINSON
City/State/Zip: OKLAHOMA CITY, OK 73102
Telephone: 405 702 1113

Lab. Reference No. or Episode No.:

Sample Type

Matrix

Number of Containers

Analysis

XRF (As, Cd, Pb, Zn)	
ICP (As, Cd, Pb, Zn)	7.50000
TECP (As, Cd, Pb)	

Sampler (signature):

Special Instructions:

Date/Time

Temperature Upon Receipt:

9-19-06

Laboratory Comments:



Susan

2W2

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-8787 Fax: (816) 822-3463

Laboratory: DEQ-SEL
Address: 707 N ROBINSON
City/State/Zip: OKLAHOMA CITY OK 73102
Telephone: 405 702 1113

Document Control No: 092106A

Lab. Reference No. or Episode No.:

Attention: TRACY COOLEY

Project Number: 36478

Sample Type

Client Name: DEQ-TFM

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Liquid	Solid	Gas	Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time						
TFM	MW-03	GW03		2006	—	—	09/13/06	0907	X			4	X X	405873
	MW-1000	GW03						0907	X			4	X X	405874
	MW-04	GW03						1035	X			12	X X	405875 USE FOR MS/MS
	MW-01	GW03						1200	X			3	X X	405876 TOC NOT COLLECTED
	MW-02	GW03						1240	X			3	X X	405877 TOC NOT COLLECTED
	MW-05	GW03						1320	X			4	X X	405878
	MW-06	GW03						1415	X			4	X X	405879
	MW-04D	GW03						1922	X			4	X X	405880
	FA-01	SW01					09/20/06	1000	X			3	X X	405881
	FA-02	SW01						1255	X			3	X X	405882
	FA-1000	SW01						1255	X			3	X X	405883
	FA-03	SW01						1338	X			3	X X	405884
	RW-01	GW03						1720	X			4	X X	405885
	EDW 10-12							1835	X			1	X	ICW CHARACTERIZATION
✓	ICW 14-15, 19-20							1840	X			1	X	ICW CHARACTERIZATION

Sampler (signature): DAVID BARKER

Sampler (signature):

Special Instructions: FILTERED & UNFILTERED SAMPLES COLLECTED FOR ICP: GENERAL CHEMISTRY=ALKALINITY, COO, CHLORIDE, NO₃ AS N, SULFATE, TOC

Relinquished By (signature):

Date/Time
09/24/06 1700

Received By (signature):

Date/Time
9/22/06 1315

Ice Present in Container:

Yes ☒ No ☐

Temperature Upon Receipt:

Relinquished By (signature):

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:

TFM-0002997



Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering 9400 Ward Parkway Kansas City, Missouri 64114 Phone: (816) 333-8787 Fax: (816) 822-3463 Attention: TRACY COOLEY		Laboratory: DEQ - SEL Address: 707 N. ROBINSON City/State/Zip: OKLAHOMA CITY OK 73102 Telephone: 405 702 1113		Document Control No: 0921006 Lab. Reference No. or Episode No.:							
Project Number: 36478		Sample Type		<div>Analysis VAF (As, Cd, Pb, Zn) ICP (As, Cd, Pb, Zn) + % Solids TCLP (As, Cd, Pb)</div>							
Client Name: DEQ - TFM		Matrix									
Sample Number		Sample Event									
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	Sample Depth (in feet) From To	Sample Collected Date Time	Liquid	Solid	Gas	Number of Containers	Remarks
TFM	FP-01	SD01		2006	0 0.5	09/20/06 1417		X		1 X	405888
↓	FP-02	SD01		↓	0 0.5	↓ 1511		X		6 X X X	405889 MS/ASD CONFIRMATION LAB
↓	FP-1000	SD01		↓	0 0.5	↓ 1511		X		3 X X X	405890 CONFIRMATION
↓	FP-03	SD01		↓	0 0.5	↓ 1557		X		1 X	405891
Sampler (signature): DAVID PARKER Sampler (signature): Special Instructions: 00EQ PM: DENNIS DATIN											
Relinquished By (signature): 1. David Parker		Date/Time 09/21/06 1700		Received By (signature): [Signature]		Date/Time 9/22/06 135		Ice Present in Container: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Temperature Upon Receipt:	
Relinquished By (signature): 2.		Date/Time		Received By (signature): Tammy		Date/Time 9-22-06 1415		Laboratory Comments:			

Oklahoma SEL

Analytical Data

RI Phase II

Soil / Sediment Data

Samples for XRF, ICP, and TCLP Metals Analysis

**Note: QC information for XRF is presented with samples that
were only analyzed using XRF.**

Sample Number: 404996
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1013
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Confirmation #0-K03013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		230	MG/KG	09/29/06	6200
Cadmium (TCLP)		559	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		96	MG/KG	10/20/06	6010
Cadmium, XRF		81.3	MG/KG	09/29/06	6200
Cadmium , Sediment		61	MG/KG	10/20/06	6010
Lead, XRF		3610	MG/KG	09/29/06	6200
Lead, Sediment		3240	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	09/29/06	6200
Zinc, Sediment		12100	MG/KG	10/20/06	6010
Lead (TCLP)		3390	UG/L	11/16/06	6010
% Solids		86.2	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

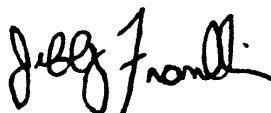
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SP-55/SS01; USE FOR CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 404997
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1013
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Rule Section 304(c)(1)(3)

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		234	MG/KG	09/29/06	6200
Cadmium (TCLP)		577	UG/L	11/16/06	6010
Arsenic (TCLP)		54	UG/L	11/16/06	6010
Arsenic, Sediment		97	MG/KG	10/20/06	6010
Cadmium, XRF		71.2	MG/KG	09/29/06	6200
Cadmium , Sediment		58	MG/KG	10/20/06	6010
Lead, XRF		3630	MG/KG	09/29/06	6200
Lead, Sediment		3200	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	09/29/06	6200
Zinc, Sediment		12200	MG/KG	10/20/06	6010
Lead (TCLP)		3320	UG/L	11/16/06	6010
% Solids		87.8	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

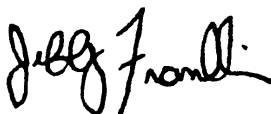
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SP-1015/SS01; USE FOR CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405009
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1113
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Compliance ID#00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium (TCLP)		25	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		11	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Cadmium , Sediment		5	MG/KG	10/20/06	6010
Lead, XRF		115	MG/KG	10/02/06	6200
Lead, Sediment		102	MG/KG	10/20/06	6010
Zinc, XRF		997	MG/KG	10/02/06	6200
Zinc, Sediment		717	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		84.6	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

SP-60/SS01; USE FOR CONFIRMATION, MS/MSD

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OVC0012

Sample Number: 405015
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1050
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Cadmium , Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF	<	20	MG/KG	10/02/06	6200
Lead, Sediment		12	MG/KG	10/20/06	6010
Zinc, XRF		77.7	MG/KG	10/02/06	6200
Zinc, Sediment		45	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		82.6	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

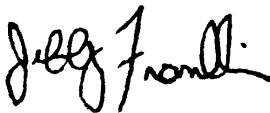
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-SP-04/SS01; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

Sample Number: 405027
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1015
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Certified Water Certification #OK000010

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		227	MG/KG	10/02/06	6200
Arsenic, Sediment		66	MG/KG	10/20/06	6010
Cadmium, XRF		193	MG/KG	10/02/06	6200
Cadmium , Sediment		147	MG/KG	10/20/06	6010
Lead, XRF		3960	MG/KG	10/02/06	6200
Lead, Sediment		2960	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	10/02/06	6200
Zinc, Sediment		15000	MG/KG	10/20/06	6010
% Solids		70.3	%	11/20/06	CLP 05.3

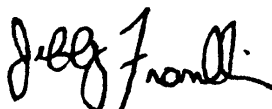
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-100/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

Sample Number: 405028
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1035
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
Environmental Monitoring System (EMS) 11/21/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		284	MG/KG	10/02/06	6200
Arsenic, Sediment		121	MG/KG	10/20/06	6010
Cadmium, XRF		166	MG/KG	10/02/06	6200
Cadmium, Sediment		134	MG/KG	10/20/06	6010
Lead, XRF		4710	MG/KG	10/02/06	6200
Lead, Sediment		3980	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	10/02/06	6200
Zinc, Sediment		15800	MG/KG	10/20/06	6010
% Solids		77.8	%	11/20/06	CLP 05.3

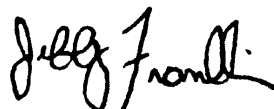
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-100/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405029
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1145
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #2100041

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	>	650	MG/KG	10/02/06	6200
Arsenic, Sediment		395	MG/KG	10/20/06	6010
Cadmium, XRF		110	MG/KG	10/02/06	6200
Cadmium , Sediment		100	MG/KG	10/20/06	6010
Lead, XRF	>	5500	MG/KG	10/02/06	6200
Lead, Sediment		15900	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	10/02/06	6200
Zinc, Sediment		42500	MG/KG	10/20/06	6010
% Solids		79.6	%	11/20/06	CLP 05.3

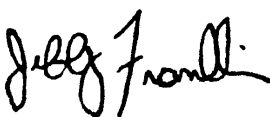
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-101/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405030
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1200
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #DWT00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		285	MG/KG	10/02/06	6200
Arsenic, Sediment		114	MG/KG	10/20/06	6010
Cadmium, XRF		42.9	MG/KG	10/02/06	6200
Cadmium , Sediment		32	MG/KG	10/20/06	6010
Lead, XRF		4720	MG/KG	10/02/06	6200
Lead, Sediment		3490	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	10/02/06	6200
Zinc, Sediment		14700	MG/KG	10/20/06	6010
% Solids		87	%	11/20/06	CLP 05.3

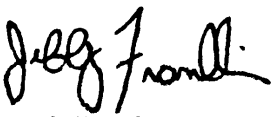
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-101/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405031
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1334
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK000010

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium (TCLP)		20	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Cadmium , Sediment		3	MG/KG	10/20/06	6010
Lead, XRF		58.3	MG/KG	10/02/06	6200
Lead, Sediment		62	MG/KG	10/20/06	6010
Zinc, XRF		382	MG/KG	10/02/06	6200
Zinc, Sediment		327	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		81.2	%	10/27/06	CLP 05.3

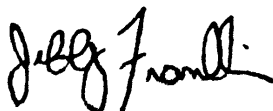
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1013/SS02; CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405033
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1334
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK000013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium (TCLP)		88	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF		10	MG/KG	10/02/06	6200
Cadmium , Sediment		12	MG/KG	10/20/06	6010
Lead, XRF		107	MG/KG	10/02/06	6200
Lead, Sediment		112	MG/KG	10/20/06	6010
Zinc, XRF		786	MG/KG	10/02/06	6200
Zinc, Sediment		835	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		81.4	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-103/SS02; USE FOR MS/MSD; CONFIRMATION, LAB DATA

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405042
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1053
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #D1004573

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		136	MG/KG	10/03/06	6200
Cadmium (TCLP)		359	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		74	MG/KG	10/20/06	6010
Cadmium, XRF		36.4	MG/KG	10/03/06	6200
Cadmium , Sediment		26	MG/KG	10/20/06	6010
Lead, XRF		1980	MG/KG	10/03/06	6200
Lead, Sediment		1520	MG/KG	10/20/06	6010
Zinc, XRF		6550	MG/KG	10/03/06	6200
Zinc, Sediment		4810	MG/KG	10/20/06	6010
Lead (TCLP)		1300	UG/L	11/16/06	6010
% Solids		84	%	10/27/06	CLP 05.3

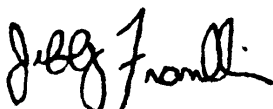
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40D/SS01; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405048
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1449
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification D1400013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		144	MG/KG	10/03/06	6200
Arsenic, Sediment		49	MG/KG	10/20/06	6010
Cadmium, XRF		127	MG/KG	10/03/06	6200
Cadmium , Sediment		89	MG/KG	10/20/06	6010
Lead, XRF		2220	MG/KG	10/03/06	6200
Lead, Sediment		1680	MG/KG	10/20/06	6010
Zinc, XRF	>	7000	MG/KG	10/03/06	6200
Zinc, Sediment		8090	MG/KG	10/20/06	6010
% Solids		86.7	%	11/20/06	CLP 05.3

Labs performing analysis on this Sample:

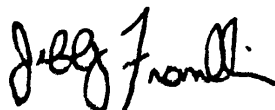
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49C/SS01

ANALYST`S COMMENTS:



Jeffrey Franklin

* ANALYST State Environmental Laboratory

Sample Number: 405051
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1630
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Contaminant List 10K00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Cadmium , Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF	<	20	MG/KG	10/03/06	6200
Lead, Sediment		17	MG/KG	10/20/06	6010
Zinc, XRF		216	MG/KG	10/03/06	6200
Zinc, Sediment		151	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		89	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

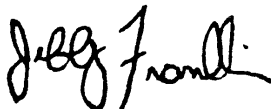
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49D/SS02; USE FOR CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405060
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1435
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Determination No. 800013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		42.6	MG/KG	10/06/06	6200
Cadmium (TCLP)		15	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		23	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Cadmium , Sediment		2	MG/KG	10/20/06	6010
Lead, XRF		503	MG/KG	10/06/06	6200
Lead, Sediment		425	MG/KG	10/20/06	6010
Zinc, XRF		966	MG/KG	10/06/06	6200
Zinc, Sediment		746	MG/KG	10/20/06	6010
Lead (TCLP)		94	UG/L	11/16/06	6010
% Solids		83.3	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

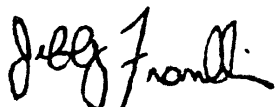
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-96D/SS01; USE FOR CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405066
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2006
Time Collected: 1644
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK060015

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Cadmium , Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF	<	20	MG/KG	10/06/06	6200
Lead, Sediment		22	MG/KG	10/20/06	6010
Zinc, XRF		113	MG/KG	10/06/06	6200
Zinc, Sediment		67	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		84.4	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-OSL-06/SS01; CONFIRMATION; USE FOR MS (MST)

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405078
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1420
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Certification #OKG00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Cadmium , Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF	<	20	MG/KG	10/09/06	6200
Lead, Sediment		13	MG/KG	10/20/06	6010
Zinc, XRF		69.8	MG/KG	10/09/06	6200
Zinc, Sediment		46	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		86.4	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

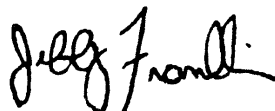
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-113/SS01; CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405089
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1435
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #03-001013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		75.6	MG/KG	10/09/06	6200
Cadmium (TCLP)		191	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		23	MG/KG	10/20/06	6010
Cadmium, XRF		28.3	MG/KG	10/09/06	6200
Cadmium , Sediment		19	MG/KG	10/20/06	6010
Lead, XRF		927	MG/KG	10/09/06	6200
Lead, Sediment		700	MG/KG	10/20/06	6010
Zinc, XRF		3180	MG/KG	10/09/06	6200
Zinc, Sediment		2360	MG/KG	10/20/06	6010
Lead (TCLP)		268	UG/L	11/16/06	6010
% Solids		87.4	%	10/27/06	CLP 05.3

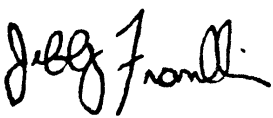
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39E/SS01; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405100
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1149
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification DOK05010

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium (TCLP)		12	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, Sediment		1	MG/KG	10/20/06	6010
Lead, XRF		102	MG/KG	10/09/06	6200
Lead, Sediment		77	MG/KG	10/20/06	6010
Zinc, XRF		430	MG/KG	10/09/06	6200
Zinc, Sediment		292	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		95.3	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

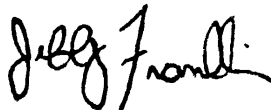
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-12E/SS02; USE FOR CONFIRMATION

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405110
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1600
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium (TCLP)		15	UG/L	10/20/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		10	MG/KG	11/16/06	6010
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, Sediment		1	MG/KG	10/20/06	6010
Lead, XRF		34.3	MG/KG	10/10/06	6200
Lead, Sediment		31	MG/KG	10/20/06	6010
Zinc, XRF		534	MG/KG	10/10/06	6200
Zinc, Sediment		395	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		85.7	%	10/27/06	CLP 05.3

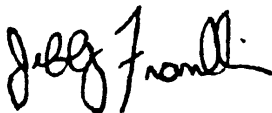
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10A/SS02; USE FOR CONFIRMATION



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405111
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 0843
Date Received: 09/14/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		11	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF		40.6	MG/KG	10/10/06	6200
Lead, Sediment		44	MG/KG	10/20/06	6010
Zinc, XRF		227	MG/KG	10/10/06	6200
Zinc, Sediment		183	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		85.6	%	10/27/06	CLP 05.3

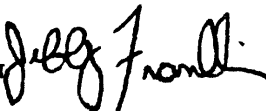
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05A/SS02; USE FOR CONFIRMATION



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #CCK00010

Sample Number: 405653
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1530
Date Received: 09/20/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		41.9	MG/KG	10/10/06	6200
Cadmium (TCLP)		20	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		24	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, Sediment		4	MG/KG	10/20/06	6010
Lead, XRF		419	MG/KG	10/10/06	6200
Lead, Sediment		296	MG/KG	10/20/06	6010
Zinc, XRF		1690	MG/KG	10/10/06	6200
Zinc, Sediment		1090	MG/KG	10/20/06	6010
Lead (TCLP)		63	UG/L	11/16/06	6010
% Solids		89.5	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

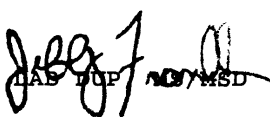
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-09B/SS01; USE FOR CONFIRMATION, LAB DUP NO MSD

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

Sample Number: 405659
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1000
Date Received: 09/20/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKCL0016

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium (TCLP)		9	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, Sediment	<	1	MG/KG	10/20/06	6010
Lead, XRF		35	MG/KG	10/11/06	6200
Lead, Sediment		52	MG/KG	10/20/06	6010
Zinc, XRF		201	MG/KG	10/11/06	6200
Zinc, Sediment		149	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		94.1	%	10/27/06	CLP 05.3

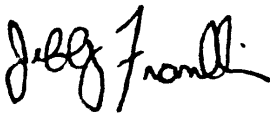
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-97C/SS02; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405667
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1218
Date Received: 09/20/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #000002

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		12.6	MG/KG	10/11/06	6200
Cadmium (TCLP)		15	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		11	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium , Sediment		2	MG/KG	10/20/06	6010
Lead, XRF		159	MG/KG	10/11/06	6200
Lead, Sediment		118	MG/KG	10/20/06	6010
Zinc, XRF		652	MG/KG	10/11/06	6200
Zinc, Sediment		440	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		88.7	%	10/27/06	CLP 05.3

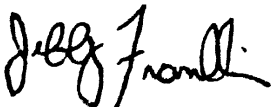
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-08B/SS01; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405668
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1218
Date Received: 09/20/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #C110013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.9	MG/KG	10/11/06	6200
Cadmium (TCLP)		8	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		12	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium , Sediment		3	MG/KG	10/20/06	6010
Lead, XRF		182	MG/KG	10/11/06	6200
Lead, Sediment		138	MG/KG	10/20/06	6010
Zinc, XRF		760	MG/KG	10/11/06	6200
Zinc, Sediment		538	MG/KG	10/20/06	6010
Lead (TCLP)	<	50	UG/L	11/16/06	6010
% Solids		87.3	%	10/27/06	CLP 05.3

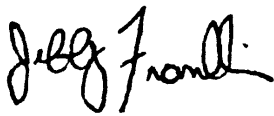
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-1001/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

Sample Number: 405678
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1558
Date Received: 09/20/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		30.1	MG/KG	10/11/06	6200
Cadmium (TCLP)		71	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment		12	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium , Sediment		7	MG/KG	10/20/06	6010
Lead, XRF		373	MG/KG	10/11/06	6200
Lead, Sediment		286	MG/KG	10/20/06	6010
Zinc, XRF		1090	MG/KG	10/11/06	6200
Zinc, Sediment		811	MG/KG	10/20/06	6010
Lead (TCLP)		115	UG/L	11/16/06	6010
% Solids		87.8	%	10/27/06	CLP 05.3

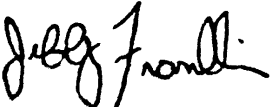
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-36C/SS01; CONFIRMATION

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405889
Project Code: TF-SED
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1511
Date Received: 09/22/2006
Date Completed: 11/22/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/22/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium (TCLP)	<	5	UG/L	11/16/06	6010
Arsenic (TCLP)	<	50	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium , Sediment		2	MG/KG	10/20/06	6010
Lead, XRF		89.4	MG/KG	10/11/06	6200
Lead, Sediment		87	MG/KG	10/20/06	6010
Zinc, XRF		525	MG/KG	10/11/06	6200
Zinc, Sediment		423	MG/KG	10/20/06	6010
Lead (TCLP)		66	UG/L	11/16/06	6010
% Solids		52.55	%	10/27/06	CLP 05.3

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

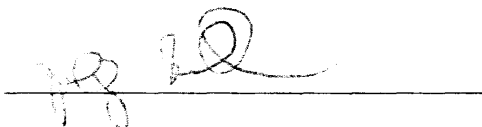
SAMPLERS COMMENTS:

FP-02/SD01; CONFIRMATION, MS/MSD, LAB DUP

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405890
Project Code: TF-SED
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1511
Date Received: 09/22/2006
Date Completed: 11/21/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/21/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Act Section 106(c)(3)

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium (TCLP)		7	UG/L	11/16/06	6010
Arsenic (TCLP)		61	UG/L	11/16/06	6010
Arsenic, Sediment	<	10	MG/KG	10/20/06	6010
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, Sediment		2	MG/KG	10/20/06	6010
Lead, XRF		80.9	MG/KG	10/11/06	6200
Lead, Sediment		80	MG/KG	10/20/06	6010
Zinc, XRF		481	MG/KG	10/11/06	6200
Zinc, Sediment		411	MG/KG	10/20/06	6010
Lead (TCLP)		172	UG/L	11/16/06	6010
% Solids	R	43.5	%	11/20/06	CLP 05.3

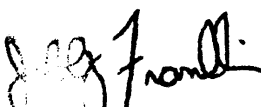
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
FP-1000/SD01; CONFIRMATION

ANALYST'S COMMENTS:
(R) Rejected


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

QC Data
ICP in soil

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 404996 to 405889
 Preparation Blank Matrix: soil
 Concentration Units: mg/kg
 Date of Analysis 10/20/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	10/17/2006	10/18/2006	10/19/2006
Arsenic	< 10	<	<	<	<	<	<
Cadmium	< 1	<	<	<	<	<	<
Lead	< 10	<	<	<	<	<	<
Zinc	< 12	<	<	<	<	<	<

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - ICP**

SEL Sample Range: 404996 to 405889
 Project Code: TF-SED
 Date of Analysis: 10/20/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	5110	102.2	5170	103.4	1.2%
Cadmium	5000	4930	98.6	5060	101.2	2.6%
Lead	5000	4900	98.0	5070	101.4	3.4%
Zinc	5000	4930	98.6	4830	96.6	2.0%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 07/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
ICP INITIAL AND FINAL LABORATORY CONTROL SAMPLE (LCS)³

SEL Sample Range: 404996 to 405889
 Project Code: TF-SED
 Date of Analysis: 10/20/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb. 07
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	1000	1020	102.0	992	99.2	2.8%
Cadmium	1000	975	97.5	975	97.5	0.0%
Lead	1000	982	98.2	993	99.3	1.1%
Zinc	1000	995	99.5	957	95.7	3.9%

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/20/2006
 SEL Sample Range: 404996 to 405889 SEL Sample # **405009**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits	Sample Conc.	MS Result	MS %Rec	MSD Result	MSD %Rec	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2880	96.0	85 - 115	56	2840	96.7	2990	101.9	99.3	75 - 125	5.1	20%
Cadmium	300	285	95.0	85 - 115	25	303	97.5	313	101.1	99.3	75 - 125	3.2	20%
Lead	2000	1890	94.5	85 - 115	510	2370	98.4	2460	103.2	100.8	75 - 125	3.7	20%
Zinc	1000	953	95.3	85 - 115	3580	4510	97.6	4770	124.9	111.2	75 - 125	5.6	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/20/2006
 SEL Sample Range: 404996 to 405889 SEL Sample # **405033**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec	MSD Result	MSD %Rec	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2990	99.7	85 - 115	39	3060	101.0	2790	92.0	96.5	75 - 125	9.2	20%
Cadmium	300	296	98.7	85 - 115	60	346	96.6	325	89.5	93.1	75 - 125	6.3	20%
Lead	2000	1960	98.0	85 - 115	560	2460	96.9	2290	88.3	92.6	75 - 125	7.2	20%
Zinc	1000	994	99.4	85 - 115	4170	4850	68.4	4460	29.2	48.8	75 - 125	8.4	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb} ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICP and CCV.

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/20/2006
 SEL Sample Range: 404996 to 405889 SEL Sample # **405066**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec	MSD Result	MSD %Rec	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	2880	96.0	85 - 115	13	3080	106.5	2990	103.4	104.9	75 - 125	3.0	20%
Cadmium	300	285	95.0	85 - 115	0.2	299	104.8	290	101.7	103.3	75 - 125	3.1	20%
Lead	2000	1890	94.5	85 - 115	107	2080	104.4	2040	102.3	103.3	75 - 125	1.9	20%
Zinc	1000	953	95.3	85 - 115	334	1300	101.4	1270	98.2	99.8	75 - 125	2.3	20%

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/20/2006
 SEL Sample Range: 404996 to 405889 SEL Sample # **405653**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate								
	Spike	LFB	LFB	%Rec	Sample	MS	MS	MSD	MSD	MS/MSD	RPA	MS/MSD	RPD	
	Conc.	Result	%Rec.	Limits		Result	%Rec.	Result	%Rec.	%Rec	Limits	RPD	Limit	
Arsenic	3000	2950	98.3	85 - 115	122	3130	102.0	3000	97.6	99.8	75 - 125	4.2	20%	
Cadmium	300	288	96.0	85 - 115	22	320	103.5	306	98.6	101.0	75 - 125	4.5	20%	
Lead	2000	1910	95.5	85 - 115	1480	3530	107.3	3450	103.1	105.2	75 - 125	2.3	20%	
Zinc	1000	977	97.7	85 - 115	5470	6610	116.7	6600	115.7	116.2	75 - 125	0.2	20%	

COMMENTS:

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-ICP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 10/20/2006
 SEL Sample Range: 404996 to 405889 SEL Sample # **405889**
 MS/MSD Matrix: Soil
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate							
	Spike	LFB	LFB	%Rec	Sample	MS	MS	MSD	MSD	MS/MSD	RPA	MS/MSD	RPD
	Conc.	Result	%Rec.	Limits		Result	%Rec.	Result	%Rec.	%Rec	Limits	RPD	Limit
Arsenic	3000	2990	99.7	85 - 115	31	2660	87.9	3080	102.0	94.9	75 - 125	14.6	20%
Cadmium	300	296	98.7	85 - 115	12	268	86.5	307	99.7	93.1	75 - 125	13.6	20%
Lead	2000	1960	98.0	85 - 115	443	2070	83.0	2430	101.4	92.2	75 - 125	16.0	20%
Zinc	1000	994	99.4	85 - 115	2110	2570	46.3	3200	109.7	78.0	75 - 125	21.8	20%

COMMENTS:

SM 11/27/06

For 6010 metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to mg/kg this value must be multiplied by 200 to account for the amount of sample used in the digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

QC Data
TCLP

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP BLANKS**

Project Code: TF-SED
 SEL Sample Range: 404996 to 405890
 Preparation Blank Matrix: liquid
 Concentration Units: ppb
 Date of Analysis 11/16/2006
 Method: 6010

Analyte	Cal. Blank	Continuing Calibration Blank			Preparation Blank (LRB)		
	(S1)	1	2	3	1	2	3
Arsenic	< 60	<	<	<	<	<	<
Cadmium	< 5	<	<	<	<	<	<
Lead	< 50	<	<	<	<	<	<
Zinc	< 5	<	<	<	<	<	<

COMMENTS:

The preparation date for each LRB is listed in the cell directly above it's corresponding numerical sequence in the analytical run.

Form 1 Rev.12/05

STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
INITIAL AND FINAL CALIBRATION VERIFICATION - TCLP

SEL Sample Range: 404996 to 405890
 Project Code: TF-SED
 Date of Analysis: 11/16/2006
 Concentration Units: ppb
 Method: 6010

Analyte	Conc.	Initial		Final		RPD ²
		Result	%R ¹	Result	%R ¹	
Arsenic	5000	4870	97.4	5020	100.4	3.0%
Cadmium	5000	4860	97.2	4990	99.8	2.6%
Lead	5000	4820	96.4	4970	99.4	3.1%
Zinc	5000	4863	97.3	4920	98.4	1.2%

Control Limits¹: 90-110%

Upper RPD Control Limits²: 10%

COMMENTS:

Reference Sources: Accutrace Reference Standard from Accustandard; As # B2065015, Cd # B2125055, Pb # B1075029, Zn, # B2115031. All expire April 2007.

Form 4 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT
TCLP LABORATORY CONTROL SAMPLE (LCS)³**

SEL Sample Range: 404996 to 405890
 Project Code: TF-SED
 Date of Analysis: 11/16/2006
 Concentration Units: ppb
 Reference Source: SPEX Std 21 29-124AS exp Feb 07
 Method: 6010

Analyte	Conc.	LCS	
		Result	%R ¹
Arsenic	1000	952	95.2
Cadmium	1000	955	95.5
Lead	1000	958	95.8
Zinc	1000	989	98.9

Control Limits¹: 90-110% Upper RPD Control Limits²: 10%

LCS³: Secondary source laboratory control sample

COMMENTS:

Form 3 Rev. 12/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/16/06
 SEL Sample Range: 404996 to 405890 SEL Sample # **405009**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits	Sample Conc.	MS Result	MS %Rec.	MSD Result	MSD %Rec.	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3070	102.3	85 - 115	1	3260	106.2	3190	103.9	105.0	75 - 125	2.2	20%
Cadmium	300	306	102.0	85 - 115	25	338	102.3	332	100.3	101.3	75 - 125	1.8	20%
Lead	2000	2010	100.5	85 - 115	38	2090	102.1	2050	100.1	101.1	75 - 125	1.9	20%
Zinc	1000	1030	103.0	85 - 115	2940	3880	91.3	3840	87.4	89.3	75 - 125	1.0	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb} ppm. ~~To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP digestion process.~~ LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/16/06
 SEL Sample Range: 404996 to 405890 SEL Sample # **405033**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits	Sample Conc.	MS Result	MS %Rec	MSD Result	MSD %Rec	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3050	101.7	85 - 115	15	3100	101.1	3150	102.8	102.0	75 - 125	1.6	20%
Cadmium	300	307	102.3	85 - 115	88	375	93.5	381	95.4	94.5	75 - 125	1.6	20%
Lead	2000	2010	100.5	85 - 115	26	1960	96.2	1990	97.7	97.0	75 - 125	1.5	20%
Zinc	1000	1030	103.0	85 - 115	1810	2770	93.2	2780	94.2	93.7	75 - 125	0.4	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. ^{ppb}To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/16/06
 SEL Sample Range: 404996 to 405890 SEL Sample # **405066**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec. ¹	MSD Result	MSD %Rec. ¹	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3050	101.7	85 - 115	17	3260	106.3	3180	103.7	105.0	75 - 125	2.5	20%
Cadmium	300	307	102.3	85 - 115	2	312	101.0	311	100.7	100.8	75 - 125	0.3	20%
Lead	2000	2010	100.5	85 - 115	25	2060	101.2	2050	100.7	101.0	75 - 125	0.5	20%
Zinc	1000	1030	103.0	85 - 115	112	1150	100.8	1150	100.8	100.8	75 - 125	0.0	20%

COMMENTS:

sm 11/21/06

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/16/06
 SEL Sample Range: 404996 to 405890 SEL Sample # **405653**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Spike Conc.	Laboratory Fortified Blank			Sample Conc.	Matrix Spike / Matrix Spike Duplicate							
		LFB Result	LFB %Rec.	%Rec Limits		MS Result	MS %Rec.	MSD Result	MSD %Rec.	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3190	106.3	85 - 115	18	3150	98.2	3090	96.3	97.2	75 - 125	1.9	20%
Cadmium	300	328	109.3	85 - 115	20	320	91.5	317	90.5	91.0	75 - 125	0.9	20%
Lead	2000	2170	108.5	85 - 115	63	2040	91.1	2020	90.2	90.6	75 - 125	1.0	20%
Zinc	1000	1080	108.0	85 - 115	3010	3860	78.7	3840	76.9	77.8	75 - 125	0.5	20%

COMMENTS:

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. ^{0.127106}To convert to ppb this value must be multiplied by ~~1000 to account for the amount of sample used in the TCLP digestion process.~~ LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Form 2 Rev. 07/05

**STATE ENVIRONMENTAL LABORATORY
TULSA FUEL QUALITY CONTROL REPORT-TCLP
LABORATORY FORTIFIED BLANK, MATRIX SPIKE, AND MATRIX SPIKE DUPLICATE**

Date of Analysis: 11/16/06
 SEL Sample Range: 404996 to 405890 SEL Sample # **405889**
 MS/MSD Matrix: liquid
 Method: 6010
 Project Code: TF-SED
 Concentration Units: ppb

Analyte	Laboratory Fortified Blank					Matrix Spike / Matrix Spike Duplicate							
	Spike Conc.	LFB Result	LFB %Rec.	%Rec Limits	Sample Conc.	MS Result	MS %Rec.	MSD Result	MSD %Rec.	MS/MSD %Rec	RPA Limits	MS/MSD RPD	RPD Limit
Arsenic	3000	3110	103.7	85 - 115	30	3240	103.2	3180	101.3	102.3	75 - 125	1.9	20%
Cadmium	300	310	103.3	85 - 115	1	310	99.7	304	97.7	98.7	75 - 125	2.0	20%
Lead	2000	2040	102.0	85 - 115	66	2080	98.7	2050	97.3	98.0	75 - 125	1.5	20%
Zinc	1000	1060	106.0	85 - 115	1130	2140	95.3	2110	92.5	93.9	75 - 125	1.4	20%

COMMENTS:

DM 11/17/06

For TCLP metals, the value in the Sample Conc. column represents the actual instrument read in ^{ppb}ppm. To convert to ppb this value must be multiplied by 1000 to account for the amount of sample used in the TCLP/digestion process. LFB matrix is reagent water and concentrations are in ppb. Reference sources are the same as for the ICV and CCV.

Oklahoma SEL

Analytical Data

RI Phase II

Soil / Sediment Data

Samples for only XRF Analysis

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 404994 – 405008**

Sample Number: 404994
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1000
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		108	MG/KG	09/29/06	6200
Cadmium, XRF		29.4	MG/KG	09/29/06	6200
Lead, XRF		2020	MG/KG	09/29/06	6200
Zinc, XRF		1990	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-54/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

676

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* ANALYST

Sample Number: 404995
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1003
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF		23.8	MG/KG	09/29/06	6200
Zinc, XRF		440	MG/KG	09/29/06	6200

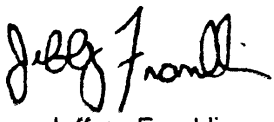
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-54/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 404998
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1025
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		94.8	MG/KG	09/29/06	6200
Cadmium, XRF		39.9	MG/KG	09/29/06	6200
Lead, XRF		1630	MG/KG	09/29/06	6200
Zinc, XRF		4860	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-55/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 404999
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1030
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		35.3	MG/KG	09/29/06	6200
Cadmium, XRF		34.6	MG/KG	09/29/06	6200
Lead, XRF		735	MG/KG	09/29/06	6200
Zinc, XRF		3130	MG/KG	09/29/06	6200

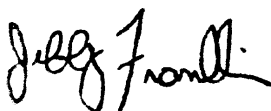
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-56/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405000
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1034
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF		751	MG/KG	09/29/06	6200

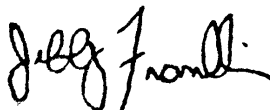
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-56/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405001
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1038
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

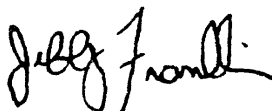
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF	<	50	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-56/SS03



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405002
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1042
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

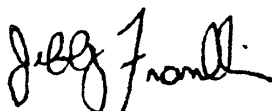
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		23.8	MG/KG	09/29/06	6200
Cadmium, XRF		11.1	MG/KG	09/29/06	6200
Lead, XRF		399	MG/KG	09/29/06	6200
Zinc, XRF		1150	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-57/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405003
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1046
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

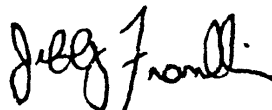
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF		174	MG/KG	09/29/06	6200
Zinc, XRF		833	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-57/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405004
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1051
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

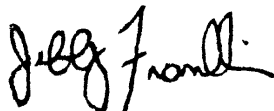
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF		753	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-58/SS01



ANALYST'S COMMENTS:
Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405005
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1057
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF		80.5	MG/KG	09/29/06	6200

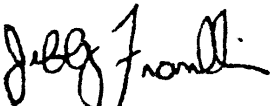
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-58/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405006
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1103
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

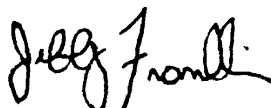
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF		84.9	MG/KG	09/29/06	6200
Zinc, XRF		853	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-59/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405007
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1106
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

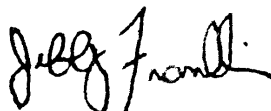
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF		84.1	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-59/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405008
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1108
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

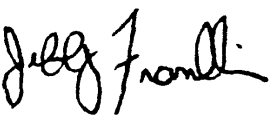
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	09/29/06	6200
Cadmium, XRF	<	10	MG/KG	09/29/06	6200
Lead, XRF	<	20	MG/KG	09/29/06	6200
Zinc, XRF		67.4	MG/KG	09/29/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-59/SS03


Jeffrey Franklin
State Environmental Laboratory

ANALYST'S COMMENTS:

* * ANALYST _____

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 1
 SEL Sample Range: 404994 to 405008
 Date of Analysis: 9/29/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	512.3	81.8
Cadmium	21.8	21.3	97.7
Lead	5532	5541	100.2
Zinc	6952	6406	92.1

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	97.9	93.2
Cadmium	41.7	42.9	102.9
Lead	1162	1227	105.6
Zinc	350.4	328.7	93.8

% Recovery
 Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405009 - 405023**

Sample Number: 405010
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1118
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

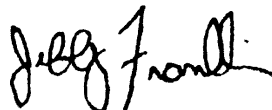
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		126	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-60/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405011
Project Code: TF-SED
Agency Number:
Date Collected: 08/18/2006
Time Collected: 1118
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

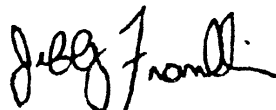
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		112	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
SP-1016/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405012
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1030
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF	<	50	MG/KG	10/02/06	6200

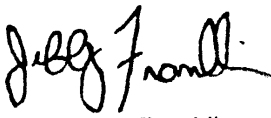
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-03/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405013
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1033
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF	<	50	MG/KG	10/02/06	6200

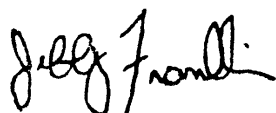
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-03/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405014
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1036
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC00613

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

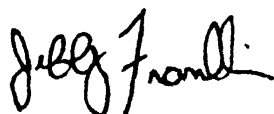
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		59.7	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-03/SS03



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405016
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1054
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		71.8	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

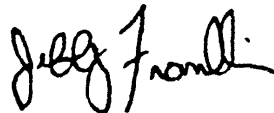
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-SP-04/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405017
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1100
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

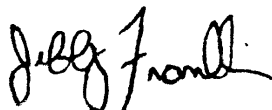
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		34.7	MG/KG	10/02/06	6200
Zinc, XRF		115	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-04/SS03



ANALYST'S COMMENTS: Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405018
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1110
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

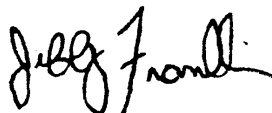
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		57.4	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-05/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405019
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1113
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		58.1	MG/KG	10/02/06	6200

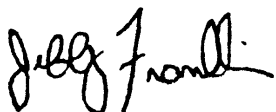
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-05/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405020
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1113
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

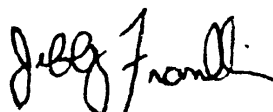
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		55.8	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-1000/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405021
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1116
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

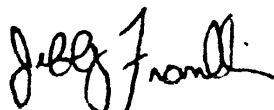
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		56.6	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-05/SS03



Jeffrey Franklin
State Environmental Laboratory

ANALYST'S COMMENTS:

*

* ANALYST _____

Sample Number: 405022
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1130
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

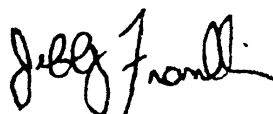
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		122	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-06/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405023
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1136
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		96.5	MG/KG	10/02/06	6200

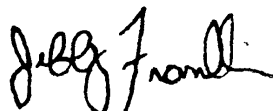
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-06/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 2
SEL Sample Range: 405009 to 405023
Date of Analysis: 10/2/2006
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	530	84.7
Cadmium	21.8	17.7	81.2
Lead	5532	5642	102.0
Zinc	6952	6459	92.9

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	101.1	96.3
Cadmium	41.7	40.2	96.4
Lead	1162	1145	98.5
Zinc	350.4	336.2	95.9

% Recovery
Limits¹

Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

LABORATORY MATRIX DUPLICATES

6200 XRF ANALYSIS

Batch ID: Batch 2
 SEL Sample Range: 405009 to 405023
 Date of Analysis: 10/2/2006
 Concentration Units: mg/kg

SEL Sample # 405009

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	114.7	138.4	18.7
Zinc	896.9	902.3	0.6

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405024 - 405038**

Sample Number: 405024
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1150
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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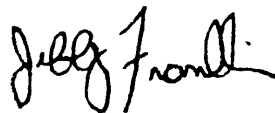
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		28.6	MG/KG	10/02/06	6200
Zinc, XRF		196	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-07/SS01



Jeffrey Franklin
State Environmental Laboratory

ANALYST'S COMMENTS:

*

* ANALYST _____

Sample Number: 405025
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1153
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF		120	MG/KG	10/02/06	6200

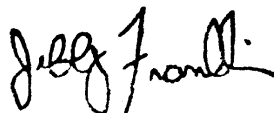
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-07/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST *etc*

Sample Number: 405026
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1156
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

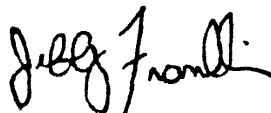
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF	<	20	MG/KG	10/02/06	6200
Zinc, XRF	<	50	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-SP-07/SS03



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405032
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1319
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		12.7	MG/KG	10/02/06	6200
Cadmium, XRF		12.4	MG/KG	10/02/06	6200
Lead, XRF		261	MG/KG	10/02/06	6200
Zinc, XRF		973	MG/KG	10/02/06	6200

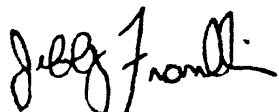
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-103/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405034
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1430
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		36.3	MG/KG	10/02/06	6200
Cadmium, XRF		11.8	MG/KG	10/02/06	6200
Lead, XRF		569	MG/KG	10/02/06	6200
Zinc, XRF		815	MG/KG	10/02/06	6200

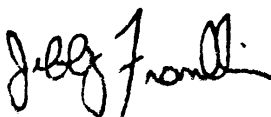
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-102/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405035
Project Code: TF-SED
Agency Number:
Date Collected: 08/22/2006
Time Collected: 1445
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		21.9	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		333	MG/KG	10/02/06	6200
Zinc, XRF		545	MG/KG	10/02/06	6200

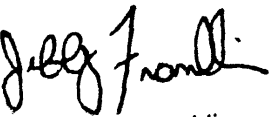
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-102/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405036
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 0756
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		94.6	MG/KG	10/02/06	6200
Zinc, XRF		714	MG/KG	10/02/06	6200

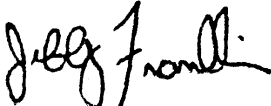
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40A/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405037
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 0849
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		23.8	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		342	MG/KG	10/02/06	6200
Zinc, XRF		1050	MG/KG	10/02/06	6200

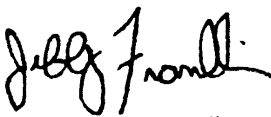
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40B/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405038
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 0903
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/02/06	6200
Cadmium, XRF	<	10	MG/KG	10/02/06	6200
Lead, XRF		29.6	MG/KG	10/02/06	6200
Zinc, XRF		193	MG/KG	10/02/06	6200

Labs performing analysis on this Sample:

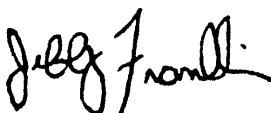
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-40B/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 3
 SEL Sample Range: 405024 to 405038
 Date of Analysis: 10/2/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	506.6	80.9
Cadmium	21.8	20.9	95.9
Lead	5532	5601	101.2
Zinc	6952	6464	93.0

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	99.8	95.0
Cadmium	41.7	40.3	96.6
Lead	1162	1187	102.2
Zinc	350.4	321.2	91.7

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

G-6

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: Batch 3
SEL Sample Range: 405024 to 405038
Date of Analysis: 10/2/2006
Concentration Units: mg/kg

SEL Sample # 405033

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	13.8	10	31.9
Lead	110.9	107.3	3.3
Zinc	935.5	786.3	17.3

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405039 - 405054**

Sample Number: 405039
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 0903
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

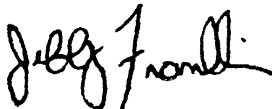
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		87.1	MG/KG	10/03/06	6200
Zinc, XRF		295	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1009/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405040
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 0948
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		86.5	MG/KG	10/03/06	6200
Cadmium, XRF		12.8	MG/KG	10/03/06	6200
Lead, XRF		1340	MG/KG	10/03/06	6200
Zinc, XRF		2620	MG/KG	10/03/06	6200

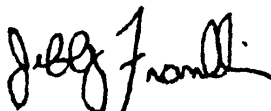
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40C/SS01; LAB DUP

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405041
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1012
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		104	MG/KG	10/03/06	6200
Zinc, XRF		1040	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

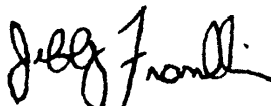
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-40C/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405043
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1107
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		108	MG/KG	10/03/06	6200
Zinc, XRF		1230	MG/KG	10/03/06	6200

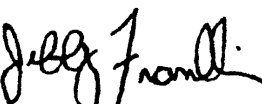
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40D/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405044
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1147
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10.2	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		198	MG/KG	10/03/06	6200
Zinc, XRF		858	MG/KG	10/03/06	6200

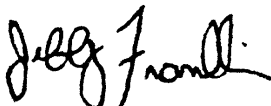
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405045
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1159
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		27.8	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		363	MG/KG	10/03/06	6200
Zinc, XRF		1250	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

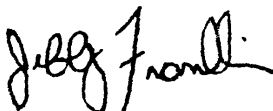
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-40E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST _____ State Environmental Laboratory

Sample Number: 405046
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1349
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		92.8	MG/KG	10/03/06	6200
Zinc, XRF		506	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

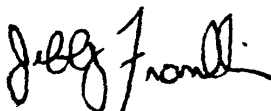
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49A/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405047
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1349
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
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CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		130	MG/KG	10/03/06	6200
Zinc, XRF		577	MG/KG	10/03/06	6200

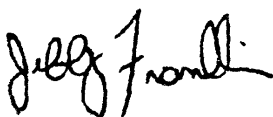
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1010/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405049
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1517
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF		38.6	MG/KG	10/03/06	6200
Lead, XRF		72.2	MG/KG	10/03/06	6200
Zinc, XRF		1560	MG/KG	10/03/06	6200

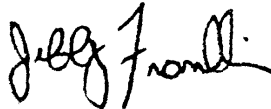
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-49C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405050
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1610
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		32	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		503	MG/KG	10/03/06	6200
Zinc, XRF		1360	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

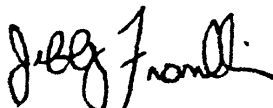
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49D/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST State Environmental Laboratory

Sample Number: 405052
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1717
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		16.7	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		290	MG/KG	10/03/06	6200
Zinc, XRF		1060	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

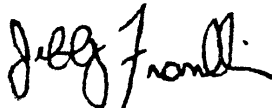
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST *6/16*

Sample Number: 405053
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1729
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF	<	20	MG/KG	10/03/06	6200
Zinc, XRF		162	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

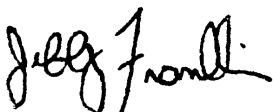
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49E/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405054
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1817
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.6	MG/KG	10/03/06	6200
Cadmium, XRF	<	10	MG/KG	10/03/06	6200
Lead, XRF		210	MG/KG	10/03/06	6200
Zinc, XRF		836	MG/KG	10/03/06	6200

Labs performing analysis on this Sample:

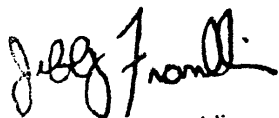
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49B/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 4
SEL Sample Range: 405039 to 405054
Date of Analysis: 10/3/2006
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	500.6	80.0
Cadmium	21.8	18.7	85.8
Lead	5532	5533	100.0
Zinc	6952	6367	91.6

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	98.2	93.5
Cadmium	41.7	38.9	93.3
Lead	1162	1147	98.7
Zinc	350.4	338.4	96.6

% Recovery
Limits¹

Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

CH

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405055 – 405069**

Sample Number: 405055
Project Code: TF-SED
Agency Number:
Date Collected: 08/24/2006
Time Collected: 1826
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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General Inquiries: 1-800-869-1400
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Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		134	MG/KG	10/06/06	6200
Zinc, XRF		543	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49B/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405056
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1329
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		23.3	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		261	MG/KG	10/06/06	6200
Zinc, XRF		864	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-96A/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405057
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1400
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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To: LAND PROTECTION DIVISION
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		140	MG/KG	10/06/06	6200
Zinc, XRF		556	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

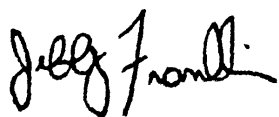
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-96C/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405058
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1400
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
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Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		13.1	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		145	MG/KG	10/06/06	6200
Zinc, XRF		548	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

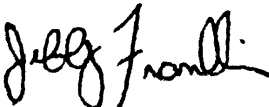
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-1011/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405059
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1408
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

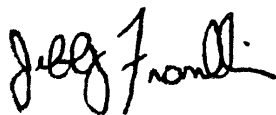
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		11	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		138	MG/KG	10/06/06	6200
Zinc, XRF		477	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-96C/SS02



Jeffrey Franklin
State Environmental Laboratory

ANALYST'S COMMENTS:

* * ANALYST _____

Sample Number: 405061
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1446
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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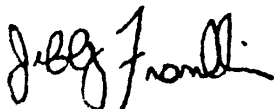
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		119	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		1430	MG/KG	10/06/06	6200
Zinc, XRF		1860	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-96D/SS02



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405062
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1511
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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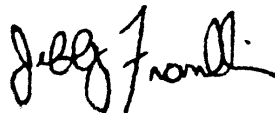
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		37.5	MG/KG	10/06/06	6200
Zinc, XRF		194	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-96E/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405063
Project Code: TF-SED
Agency Number:
Date Collected: 08/28/2006
Time Collected: 1519
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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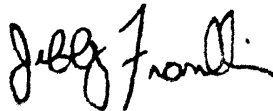
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		73	MG/KG	10/06/06	6200
Zinc, XRF		298	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-96E/SS02



Jeffrey Franklin
State Environmental Laboratory

ANALYST'S COMMENTS:

* * ANALYST _____

Sample Number: 405064
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2006
Time Collected: 1555
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		54	MG/KG	10/06/06	6200
Zinc, XRF		260	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TSL-09/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405065
Project Code: TF-SED
Agency Number:
Date Collected: 08/30/2006
Time Collected: 1608
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		26.9	MG/KG	10/06/06	6200
Zinc, XRF		173	MG/KG	10/06/06	6200

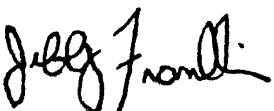
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TSL-09/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405067
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 0800
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKG00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

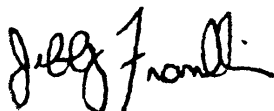
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF	<	20	MG/KG	10/06/06	6200
Zinc, XRF		93.2	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-104/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405068
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 0835
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

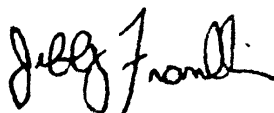
Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF	<	20	MG/KG	10/06/06	6200
Zinc, XRF		98.1	MG/KG	10/06/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-105/SS01



ANALYST'S COMMENTS:

Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405069
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 0909
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/06/06	6200
Cadmium, XRF	<	10	MG/KG	10/06/06	6200
Lead, XRF		48.5	MG/KG	10/06/06	6200
Zinc, XRF		253	MG/KG	10/06/06	6200

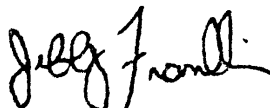
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-107/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST etc

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 5
 SEL Sample Range: 405055 to 405069
 Date of Analysis: 10/6/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	614.7	98.2
Cadmium	21.8	19.6	89.9
Lead	5532	5539	100.1
Zinc	6952	6402	92.1

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	120.7	115.0
Cadmium	41.7	41.6	99.8
Lead	1162	1191	102.5
Zinc	350.4	339.3	96.8

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: Batch 5
SEL Sample Range: 405055 to 405069
Date of Analysis: 10/6/2006
Concentration Units: mg/kg

SEL Sample # 405066

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	<10	<10	0.0
Cadmium	<10	<10	0.0
Lead	< 20	< 20	0.0
Zinc	112.6	113	0.4

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

Cxg

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405070 – 405085**

Sample Number: 405070
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 0940
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		86.7	MG/KG	10/09/06	6200
Zinc, XRF		435	MG/KG	10/09/06	6200

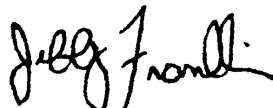
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-106/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405071
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1037
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		58.7	MG/KG	10/09/06	6200
Zinc, XRF		269	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

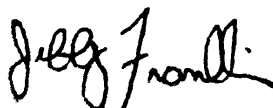
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-108/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405072
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1110
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10.9	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		78.2	MG/KG	10/09/06	6200
Zinc, XRF		383	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

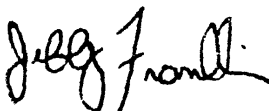
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-109/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405073
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1110
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
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General Inquiries: 1-800-869-1400
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EPA Drinking Water Certification #OK00013

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10.4	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		74.2	MG/KG	10/09/06	6200
Zinc, XRF		358	MG/KG	10/09/06	6200

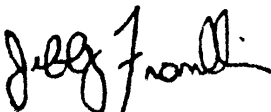
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1014/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405074
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1147
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF	<	20	MG/KG	10/09/06	6200
Zinc, XRF		64	MG/KG	10/09/06	6200

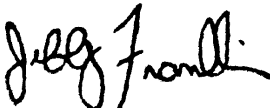
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-OSL-05/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405075
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1300
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		22.4	MG/KG	10/09/06	6200
Zinc, XRF		120	MG/KG	10/09/06	6200

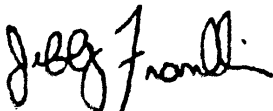
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
BG-OSL-07/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405076
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1300
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		20.1	MG/KG	10/09/06	6200
Zinc, XRF		110	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

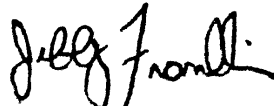
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-OSL-1000/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405077
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1343
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		46.7	MG/KG	10/09/06	6200
Zinc, XRF		209	MG/KG	10/09/06	6200

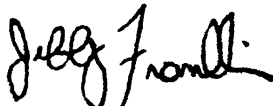
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-111/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405079
Project Code: TF-SED
Agency Number:
Date Collected: 08/31/2006
Time Collected: 1511
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF	<	20	MG/KG	10/09/06	6200
Zinc, XRF		99.5	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

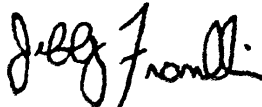
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-OSL-04/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405080
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 0845
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		20.6	MG/KG	10/09/06	6200
Zinc, XRF		347	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

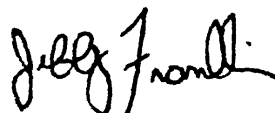
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-398/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

* ANALYST

* OSL-39A/SS02 575 12-13-06

Sample Number: 405081
Project Code: TF-SED
Agency Number:
Date Collected: 09/01/2006
Time Collected: 1027
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF	<	20	MG/KG	10/09/06	6200
Zinc, XRF	<	50	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

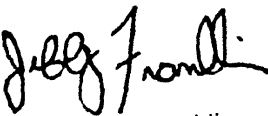
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

BG-OSL-03/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405082
Project Code: TF-SED
Agency Number:
Date Collected: 09/05/2006
Time Collected: 1456
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		27.8	MG/KG	10/09/06	6200
Cadmium, XRF		12.6	MG/KG	10/09/06	6200
Lead, XRF		329	MG/KG	10/09/06	6200
Zinc, XRF		1270	MG/KG	10/09/06	6200

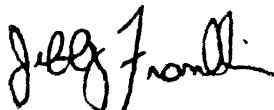
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39B/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405083
Project Code: TF-SED
Agency Number:
Date Collected: 09/05/2006
Time Collected: 1507
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		36.3	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		460	MG/KG	10/09/06	6200
Zinc, XRF		36.3	MG/KG	10/09/06	6200

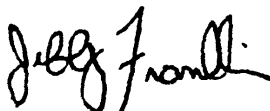
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39B/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405084
Project Code: TF-SED
Agency Number:
Date Collected: 09/05/2006
Time Collected: 1543
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		23.3	MG/KG	10/09/06	6200
Cadmium, XRF		13.9	MG/KG	10/09/06	6200
Lead, XRF		257	MG/KG	10/09/06	6200
Zinc, XRF		1230	MG/KG	10/09/06	6200

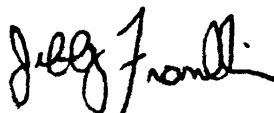
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39C/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405085
Project Code: TF-SED
Agency Number:
Date Collected: 09/05/2006
Time Collected: 1543
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		21.5	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		255	MG/KG	10/09/06	6200
Zinc, XRF		1160	MG/KG	10/09/06	6200

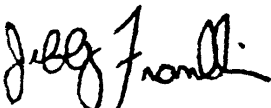
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MAUFAC

SAMPLERS COMMENTS:
OSL-1007/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 6
 SEL Sample Range: 405070 to 405085
 Date of Analysis: 10/9/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	615.2	98.3
Cadmium	21.8	21.1	96.8
Lead	5532	5673	102.5
Zinc	6952	6433	92.5

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	123.8	117.9
Cadmium	41.7	35.5	85.1
Lead	1162	1172	100.9
Zinc	350.4	342	97.6

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

UN

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405086 – 405101**

Sample Number: 405086
Project Code: TF-SED
Agency Number:
Date Collected: 09/05/2006
Time Collected: 1555
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF	<	20	MG/KG	10/09/06	6200
Zinc, XRF		492	MG/KG	10/09/06	6200

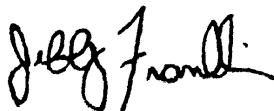
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405087
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1345
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		88.4	MG/KG	10/09/06	6200
Cadmium, XRF		31.3	MG/KG	10/09/06	6200
Lead, XRF		1060	MG/KG	10/09/06	6200
Zinc, XRF		3580	MG/KG	10/09/06	6200

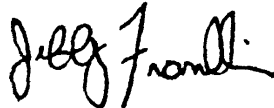
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39D/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405088
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1400
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		36.5	MG/KG	10/09/06	6200
Zinc, XRF		421	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39D/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405090
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1450
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		22.9	MG/KG	10/09/06	6200
Zinc, XRF		413	MG/KG	10/09/06	6200

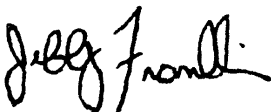
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-39E/SS02; LAB DUP

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405091
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 0854
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		63	MG/KG	10/09/06	6200
Zinc, XRF		655	MG/KG	10/09/06	6200

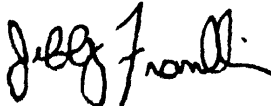
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-12A/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405092
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 0920
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		25.6	MG/KG	10/09/06	6200
Zinc, XRF		209	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

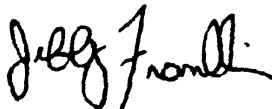
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-12B/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405093
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 0930
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF	<	20	MG/KG	10/09/06	6200
Zinc, XRF		92.4	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

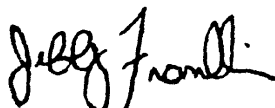
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-12B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405094
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1016
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #CK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		20.2	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		210	MG/KG	10/09/06	6200
Zinc, XRF		669	MG/KG	10/09/06	6200

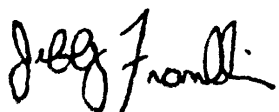
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-12C/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405095
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1025
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		58.4	MG/KG	10/09/06	6200
Zinc, XRF		480	MG/KG	10/09/06	6200

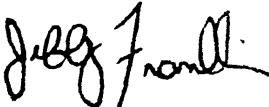
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-12C/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405096
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1059
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		19.7	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		201	MG/KG	10/09/06	6200
Zinc, XRF		643	MG/KG	10/09/06	6200

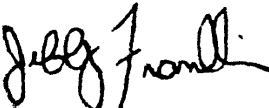
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-12D/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405097
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1110
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10.5	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		108	MG/KG	10/09/06	6200
Zinc, XRF		597	MG/KG	10/09/06	6200

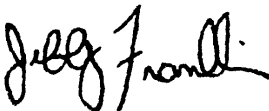
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-12D/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405098
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1138
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		13.6	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		122	MG/KG	10/09/06	6200
Zinc, XRF		557	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

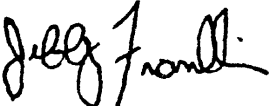
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-12E/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405099
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1138
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		13.2	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		102	MG/KG	10/09/06	6200
Zinc, XRF		430	MG/KG	10/09/06	6200

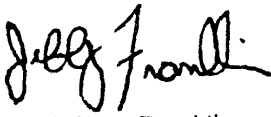
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1006/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405101
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1310
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

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Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		31.9	MG/KG	10/09/06	6200
Cadmium, XRF	<	10	MG/KG	10/09/06	6200
Lead, XRF		331	MG/KG	10/09/06	6200
Zinc, XRF		1090	MG/KG	10/09/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10E/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* ANALYST _____

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 7
 SEL Sample Range: 405086 to 405101
 Date of Analysis: 10/9/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	648.8	103.6
Cadmium	21.8	24.2	111.0
Lead	5532	5598	101.2
Zinc	6952	6459	92.9

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	117.8	112.2
Cadmium	41.7	39.5	94.7
Lead	1162	1231	105.9
Zinc	350.4	345.8	98.7

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

10/10

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405102 – 405117**

Sample Number: 405102
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1320
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		20.8	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		979	MG/KG	10/10/06	6200
Zinc, XRF		182	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

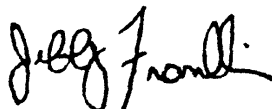
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405103
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1320
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		11	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		107	MG/KG	10/10/06	6200
Zinc, XRF		698	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

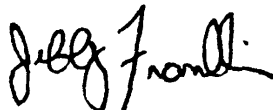
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-1003/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405104
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1350
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		32.9	MG/KG	10/10/06	6200
Cadmium, XRF		11.4	MG/KG	10/10/06	6200
Lead, XRF		388	MG/KG	10/10/06	6200
Zinc, XRF		1570	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

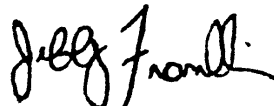
SAMPLERS COMMENTS:

TRB-~~100~~/SS01

100

SSS 12-13-06

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405105
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1400
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #CK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		43.4	MG/KG	10/10/06	6200
Cadmium, XRF		16.2	MG/KG	10/10/06	6200
Lead, XRF		480	MG/KG	10/10/06	6200
Zinc, XRF		2630	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

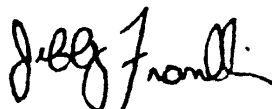
SAMPLERS COMMENTS:

TRB-100/SS02

10D

SAS 12-13-06

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY**STATE ENVIRONMENTAL LABORATORY**

707 N. ROBINSON

OKLAHOMA CITY

OKLAHOMA, 73102-6010

General Inquiries: 1-800-869-1400

Sample Receiving: (405) 702-1113

Report of Analysis by Metals

EPA Drinking Water Certification #OK00013

Sample Number: 405106
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1440
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		16.1	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		108	MG/KG	10/10/06	6200
Zinc, XRF		613	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

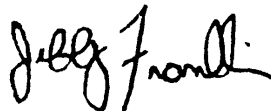
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10C/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST 

Sample Number: 405107
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1450
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		15.7	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		114	MG/KG	10/10/06	6200
Zinc, XRF		197	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

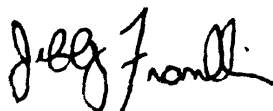
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405108
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1519
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		88.1	MG/KG	10/10/06	6200
Zinc, XRF		615	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-10B/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405109
Project Code: TF-SED
Agency Number:
Date Collected: 09/07/2006
Time Collected: 1532
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		47.5	MG/KG	10/10/06	6200
Zinc, XRF		316	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

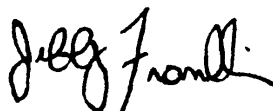
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-10B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405112
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 0920
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		28.1	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		346	MG/KG	10/10/06	6200
Zinc, XRF		1310	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

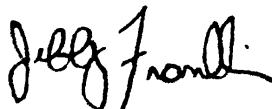
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05B/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

Sample Number: 405113
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 0930
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		105	MG/KG	10/10/06	6200
Zinc, XRF		747	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

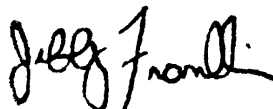
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405114
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1006
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10.5	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		119	MG/KG	10/10/06	6200
Zinc, XRF		422	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

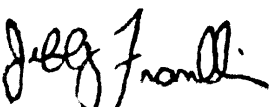
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05C/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405115
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1015
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF	<	20	MG/KG	10/10/06	6200
Zinc, XRF		296	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

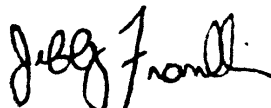
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405116
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1046
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		56.8	MG/KG	10/10/06	6200
Cadmium, XRF		23.7	MG/KG	10/10/06	6200
Lead, XRF		691	MG/KG	10/10/06	6200
Zinc, XRF		2210	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

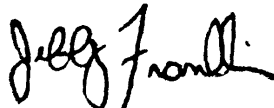
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05D/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405117
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1057
Date Received: 09/14/2006
Date Completed: 10/10/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/10/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		17.9	MG/KG	10/10/06	6200
Cadmium, XRF		12.5	MG/KG	10/10/06	6200
Lead, XRF		238	MG/KG	10/10/06	6200
Zinc, XRF		1340	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

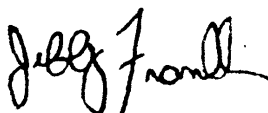
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05D/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST _____ State Environmental Laboratory

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 8
 SEL Sample Range: 405102 to 405117
 Date of Analysis: 10/10/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	638.8	102.0
Cadmium	21.8	18	82.6
Lead	5532	5607	101.4
Zinc	6952	6352	91.4

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	121	115.2
Cadmium	41.7	39.7	95.2
Lead	1162	1188	102.2
Zinc	350.4	338.3	96.5

% Recovery
 Limits¹

Laboratory: 80-120%
 Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405118 – 405657**

Sample Number: 405118
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1057
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		16.4	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		208	MG/KG	10/10/06	6200
Zinc, XRF		947	MG/KG	10/10/06	6200

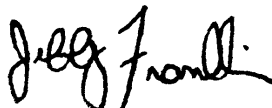
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TSL-1001/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405119
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1136
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		21.4	MG/KG	10/10/06	6200
Cadmium, XRF		11.6	MG/KG	10/10/06	6200
Lead, XRF		247	MG/KG	10/10/06	6200
Zinc, XRF		1020	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

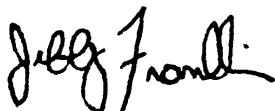
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405120
Project Code: TF-SED
Agency Number:
Date Collected: 09/08/2006
Time Collected: 1144
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		12.7	MG/KG	10/10/06	6200
Zinc, XRF		307	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

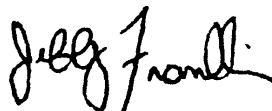
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TSL-05E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST _____ State Environmental Laboratory

Sample Number: 405121
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 0836
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		69.5	MG/KG	10/10/06	6200
Zinc, XRF		413	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

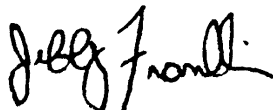
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-49DD/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST _____ State Environmental Laboratory

Sample Number: 405122
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 0902
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		17.2	MG/KG	10/10/06	6200
Zinc, XRF		263	MG/KG	10/10/06	6200

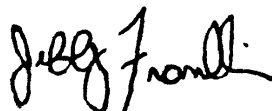
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-49EE/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST _____ State Environmental Laboratory

Sample Number: 405123
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1054
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		107	MG/KG	10/10/06	6200
Cadmium, XRF		21.4	MG/KG	10/10/06	6200
Lead, XRF		1340	MG/KG	10/10/06	6200
Zinc, XRF		2930	MG/KG	10/10/06	6200

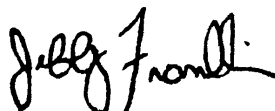
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-40DD/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405124
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1128
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code:
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		64.5	MG/KG	10/10/06	6200
Cadmium, XRF		16.8	MG/KG	10/10/06	6200
Lead, XRF		640	MG/KG	10/10/06	6200
Zinc, XRF		3240	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

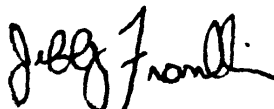
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-40CCC/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405125
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1153
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		34.2	MG/KG	10/10/06	6200
Cadmium, XRF		12.9	MG/KG	10/10/06	6200
Lead, XRF		361	MG/KG	10/10/06	6200
Zinc, XRF		1380	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

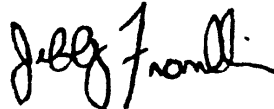
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-40CC/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405126
Project Code: TF-SED
Agency Number:
Date Collected: 09/06/2006
Time Collected: 1219
Date Received: 09/14/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W1
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		228	MG/KG	10/10/06	6200
Cadmium, XRF		10.7	MG/KG	10/10/06	6200
Lead, XRF		2580	MG/KG	10/10/06	6200
Zinc, XRF		6460	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

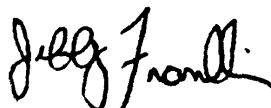
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-116/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405652
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1512
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		49.4	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		458	MG/KG	10/10/06	6200
Zinc, XRF		1950	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

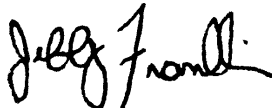
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-09A/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405654
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1540
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		41.4	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		400	MG/KG	10/10/06	6200
Zinc, XRF		1580	MG/KG	10/10/06	6200

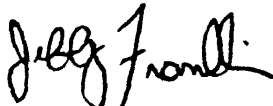
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-09B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405655
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1605
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		23.1	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		237	MG/KG	10/10/06	6200
Zinc, XRF		1050	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

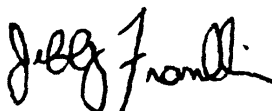
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-09E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405656
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1613
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		48.2	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		472	MG/KG	10/10/06	6200
Zinc, XRF		1890	MG/KG	10/10/06	6200

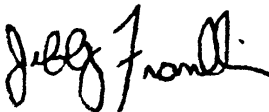
Labs performing analysis on this Sample:

Metals

SAMPLERS COMMENTS:

TRB-09E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405657
Project Code: TF-SED
Agency Number:
Date Collected: 09/11/2006
Time Collected: 1605
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		21	MG/KG	10/10/06	6200
Cadmium, XRF	<	10	MG/KG	10/10/06	6200
Lead, XRF		243	MG/KG	10/10/06	6200
Zinc, XRF		1090	MG/KG	10/10/06	6200

Labs performing analysis on this Sample:

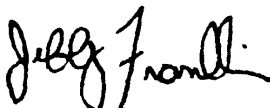
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-1002/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST  State Environmental Laboratory

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 9
 SEL Sample Range: 405118 to 405657
 Date of Analysis: 10/10/2006
 Concentration Units: mg/kg

NIST Sources: Level 1 2710
 Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	638.1	101.9
Cadmium	21.8	20.4	93.6
Lead	5532	5660	102.3
Zinc	6952	6426	92.4

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	124.8	118.9
Cadmium	41.7	40.5	97.1
Lead	1162	1162	100.0
Zinc	350.4	336.5	96.0

% Recovery

Limits¹

Laboratory: 80-120%

Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: Batch 9
 SEL Sample Range: 405118 to 405657
 Date of Analysis: 10/10/2006
 Concentration Units: mg/kg

SEL Sample # 405653

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	41.9	36	15.1
Cadmium	<10	<10	0.0
Lead	419.2	385.9	8.3
Zinc	1689.3	1526.3	10.1

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
 Project DQIs: <35%

COMMENT:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405658 – 405673**

Sample Number: 405658
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 0935
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		76	MG/KG	10/11/06	6200
Zinc, XRF		562	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

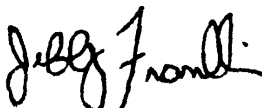
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-97D/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST 

Sample Number: 405660
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1025
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		65.1	MG/KG	10/11/06	6200
Cadmium, XRF		16.4	MG/KG	10/11/06	6200
Lead, XRF		755	MG/KG	10/11/06	6200
Zinc, XRF		5400	MG/KG	10/11/06	6200

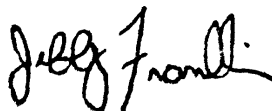
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-97E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST _____

Sample Number: 405661
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1035
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		13.7	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		197	MG/KG	10/11/06	6200
Zinc, XRF		902	MG/KG	10/11/06	6200

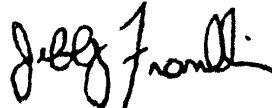
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-97E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405662
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1055
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		27.6	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		359	MG/KG	10/11/06	6200
Zinc, XRF		748	MG/KG	10/11/06	6200

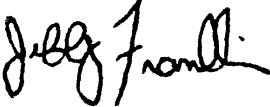
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-97F/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405663
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1055
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		49.7	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		636	MG/KG	10/11/06	6200
Zinc, XRF		861	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

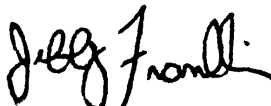
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-1012/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST OC State Environmental Laboratory

Sample Number: 405664
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1120
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.2	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		153	MG/KG	10/11/06	6200
Zinc, XRF		535	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

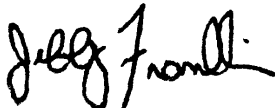
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-97G/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405665
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1130
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
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EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		57.3	MG/KG	10/11/06	6200
Zinc, XRF		256	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

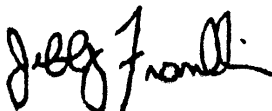
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-97G/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405666
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1200
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

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OKLAHOMA, 73102-6010
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Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		269	MG/KG	10/11/06	6200
Cadmium, XRF		18.4	MG/KG	10/11/06	6200
Lead, XRF		2850	MG/KG	10/11/06	6200
Zinc, XRF		5160	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

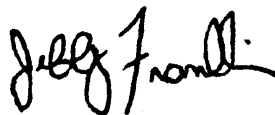
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-08A/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405669
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1228
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00012

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		21	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		214	MG/KG	10/11/06	6200
Zinc, XRF		786	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

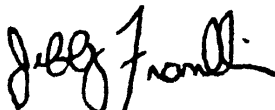
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-08B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST State Environmental Laboratory

Sample Number: 405670
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1253
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #CK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		49.9	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		607	MG/KG	10/11/06	6200
Zinc, XRF		1960	MG/KG	10/11/06	6200

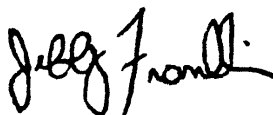
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-08C/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

Sample Number: 405671
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1258
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		72.3	MG/KG	10/11/06	6200
Cadmium, XRF		11.5	MG/KG	10/11/06	6200
Lead, XRF		797	MG/KG	10/11/06	6200
Zinc, XRF		2440	MG/KG	10/11/06	6200

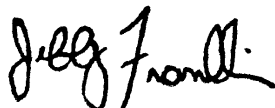
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
TRB-08C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405672
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1329
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OKC00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.2	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		201	MG/KG	10/11/06	6200
Zinc, XRF		947	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

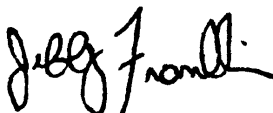
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-08E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405673
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1338
Date Received: 09/20/2006
Date Completed: 10/11/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/11/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.4	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		134	MG/KG	10/11/06	6200
Zinc, XRF		666	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

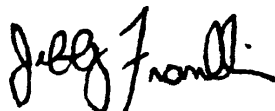
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

TRB-08E/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 10
SEL Sample Range: 405658 to 405673
Date of Analysis: 10/11/2006
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1 Conc.	Measured	
		Result	%R ¹
Arsenic	626	644.2	102.9
Cadmium	21.8	22.9	105.0
Lead	5532	5682	102.7
Zinc	6952	6416	92.3

Analyte	Level 2 Conc.	Measured	
		Result	%R ¹
Arsenic	105	123.4	117.5
Cadmium	41.7	40.8	97.8
Lead	1162	1179	101.5
Zinc	350.4	341.9	97.6

% Recovery
Limits¹

Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

Oklahoma SEL

XRF Data

**Includes QC Information Applicable to:
Lab IDs 405674 – 405891**

Sample Number: 405674
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1359
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #CK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		37.1	MG/KG	10/11/06	6200
Zinc, XRF		288	MG/KG	10/11/06	6200

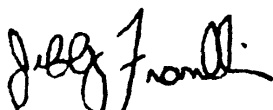
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-114/SS01

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

* * ANALYST _____

Sample Number: 405675
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1509
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		34.3	MG/KG	10/11/06	6200
Zinc, XRF		361	MG/KG	10/11/06	6200

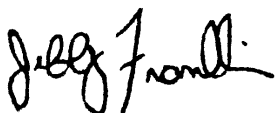
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-36A/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405676
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1536
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		11.7	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		183	MG/KG	10/11/06	6200
Zinc, XRF		826	MG/KG	10/11/06	6200

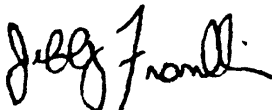
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-36B/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST 36 State Environmental Laboratory

Sample Number: 405677
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1541
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		66.9	MG/KG	10/11/06	6200
Zinc, XRF		822	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

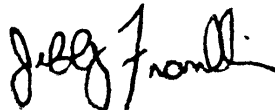
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-36B/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405679
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1610
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		64.4	MG/KG	10/11/06	6200
Zinc, XRF		564	MG/KG	10/11/06	6200

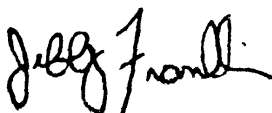
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-36C/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin

* ANALYST Jeffrey Franklin State Environmental Laboratory

Sample Number: 405680
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1627
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		118	MG/KG	10/11/06	6200
Zinc, XRF		535	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

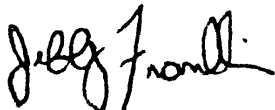
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-36D/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405681
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1637
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00010

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.5	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		156	MG/KG	10/11/06	6200
Zinc, XRF		657	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

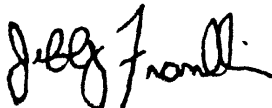
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-36D/SS02

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405682
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1659
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		53.2	MG/KG	10/11/06	6200
Cadmium, XRF		20.8	MG/KG	10/11/06	6200
Lead, XRF		734	MG/KG	10/11/06	6200
Zinc, XRF		2410	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

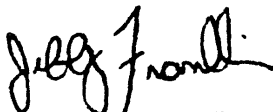
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-36E/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin

* * ANALYST State Environmental Laboratory

Sample Number: 405683
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1659
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		56	MG/KG	10/11/06	6200
Cadmium, XRF		19.9	MG/KG	10/11/06	6200
Lead, XRF		670	MG/KG	10/11/06	6200
Zinc, XRF		56	MG/KG	10/11/06	6200

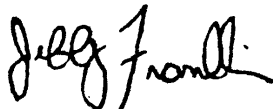
Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
OSL-1008/SS01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405684
Project Code: TF-SED
Agency Number:
Date Collected: 09/12/2006
Time Collected: 1705
Date Received: 09/20/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #CK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		14.2	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		230	MG/KG	10/11/06	6200
Zinc, XRF		869	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

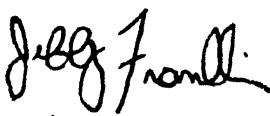
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

OSL-36E/SS02

ANALYST'S COMMENTS:


Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405888
Project Code: TF-SED
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1417
Date Received: 09/22/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF	<	10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		64.5	MG/KG	10/11/06	6200
Zinc, XRF		393	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

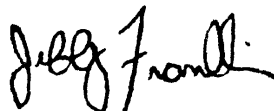
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

FP-01/SD01

ANALYST'S COMMENTS:



Jeffrey Franklin
State Environmental Laboratory

*

* ANALYST

Sample Number: 405891
Project Code: TF-SED
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1557
Date Received: 09/22/2006
Date Completed: 10/12/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/12/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, XRF		10	MG/KG	10/11/06	6200
Cadmium, XRF	<	10	MG/KG	10/11/06	6200
Lead, XRF		142	MG/KG	10/11/06	6200
Zinc, XRF		608	MG/KG	10/11/06	6200

Labs performing analysis on this Sample:

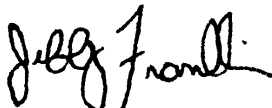
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

FP-03/SD01

ANALYST'S COMMENTS:



Jeffrey Franklin

State Environmental Laboratory

*

* ANALYST

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY CONTROL SAMPLES**

6200 XRF ANALYSIS

Batch ID: Batch 11
SEL Sample Range: 405674 to 405891
Date of Analysis: 10/11/2006
Concentration Units: mg/kg

NIST Sources: Level 1 2710
Level 2 2711

Analyte	Level 1	Measured	
	Conc.	Result	%R ¹
Arsenic	626	639.8	102.2
Cadmium	21.8	19.3	88.5
Lead	5532	5652	102.2
Zinc	6952	6410	92.2

Analyte	Level 2	Measured	
	Conc.	Result	%R ¹
Arsenic	105	121	115.2
Cadmium	41.7	39.6	95.0
Lead	1162	1224	105.3
Zinc	350.4	330	94.2

% Recovery
Limits¹

Laboratory: 80-120%
Project DQIs: 80-120%

LCS: NIST source not used in calibration.

COMMENTS:

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 3 Rev. 10/31/05

**STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
LABORATORY MATRIX DUPLICATES**

6200 XRF ANALYSIS

Batch ID: Batch 11
SEL Sample Range: 405674 to 405891
Date of Analysis: 10/11/2006
Concentration Units: mg/kg

SEL Sample # 405889

Analyte	Sample Conc.	Matrix Duplicate	RPD
Arsenic	< 10	< 10	0.0
Cadmium	< 10	< 10	0.0
Lead	89.4	95	6.1
Zinc	524.5	480.5	8.8

Any value following a less than symbol (<) is the associated method reporting limit (PQL).

Upper RPD
Limits²

Laboratory: 25%
Project DQIs: <35%

COMMENT:

LAG

XRF Upper Limit of Quantitation: As=650, Cd=1000, Pb=5500, Zn=7000

Form 5 Rev. 07/01/05

Oklahoma SEL

Analytical Data

RI Phase II

Aqueous Data

Samples for Metals and General Chemistry Analysis

Sample Number: 405873
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		12	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

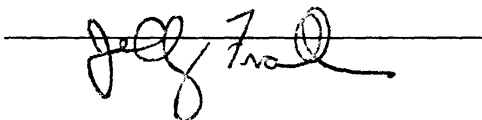
SAMPLERS COMMENTS:

MW-03/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405874
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		12	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MAUNFAC

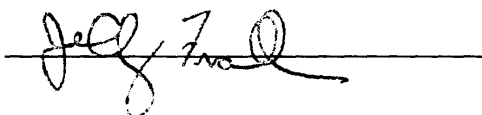
SAMPLERS COMMENTS:

MW-1000/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405875
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1035
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total		48	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		1830	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

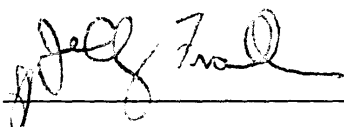
SAMPLERS COMMENTS:

MW-04/GW03; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405876
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1200
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/13/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		12	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

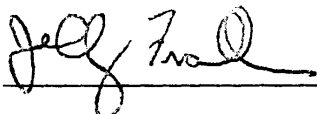
SAMPLERS COMMENTS:

MW-01/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405877
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1240
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		63	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

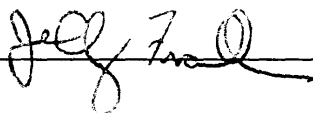
SAMPLERS COMMENTS:

MW-02/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405878
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1320
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		117	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

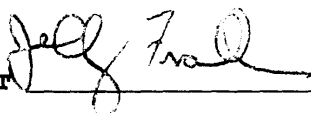
SAMPLERS COMMENTS:

MW-05/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405879
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1415
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

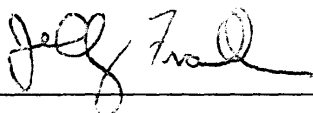
SAMPLERS COMMENTS:

MW-06/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405880
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1415
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		16	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

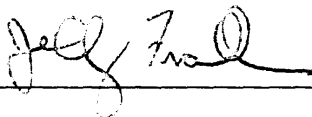
SAMPLERS COMMENTS:

MW-04D/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405881
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1000
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

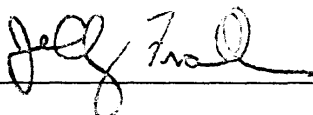
SAMPLERS COMMENTS:

FP-01/SW01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405882
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1255
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

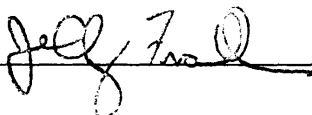
SAMPLERS COMMENTS:

FP-02/SW01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405883
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1255
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

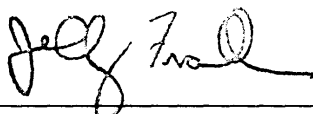
SAMPLERS COMMENTS:

FP-1000/SW01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405884
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1338
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

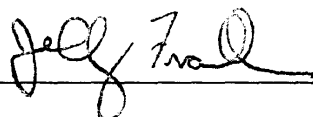
SAMPLERS COMMENTS:

FP-03/SW01

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405885
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1720
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		183	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

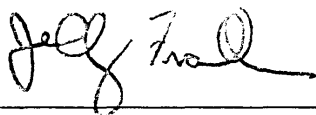
SAMPLERS COMMENTS:

RW-01/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405886
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1835
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		9	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

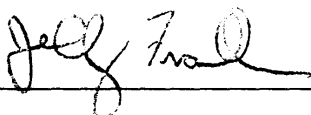
SAMPLERS COMMENTS:

IDW 10-12; IDW CHARACTERIZATION SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405887
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1840
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		149	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

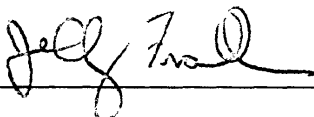
SAMPLERS COMMENTS:

IDW 14-15,19-20; IDW CHARACTERIZATION SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405919
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		11	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

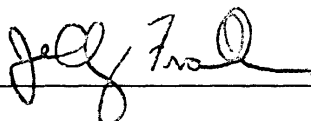
SAMPLERS COMMENTS:

MW-03/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405920
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		9	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

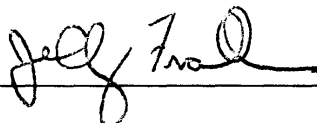
SAMPLERS COMMENTS:

MW-1000/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405921
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1035
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total		47	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		1790	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

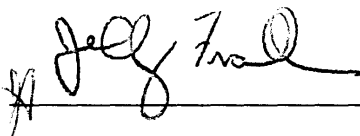
SAMPLERS COMMENTS:

MW-04/GW03; FILTERED SAMPLE; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405922
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1200
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

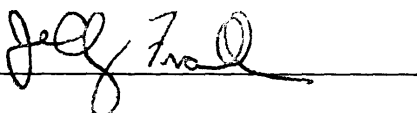
SAMPLERS COMMENTS:

MW-01/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



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Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

Sample Number: 405923
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1240
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
FWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		56	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

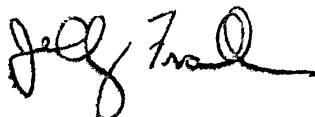
Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-02/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:



*

* ANALYST

Sample Number: 405924
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1320
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

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STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		77	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-05/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405925
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1415
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total	<	5	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

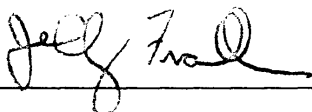
SAMPLERS COMMENTS:

MW-06/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405926
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1922
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		17	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC

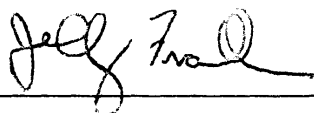
SAMPLERS COMMENTS:

MW-04D/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405927
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1720
Date Received: 09/22/2006
Date Completed: 10/17/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 10/17/2006

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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by Metals
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Arsenic, Total	<	10	UG/L	10/12/06	200.7
Cadmium, Total	<	5	UG/L	10/12/06	200.7
Lead, Total	<	10	UG/L	10/12/06	200.7
Zinc, Total		10	UG/L	10/12/06	200.7

Labs performing analysis on this Sample:

Metals

SOURCE: TULSA FUEL & MANUFAC


SAMPLERS COMMENTS:

RW-01/GW03; FILTERED SAMPLE

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405873
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		404	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.77	MG/L	09/26/06	353.2
Total Organic Carbon		1.90	MG/L	09/26/06	5310 C
Chloride		51.4	MG/L	10/05/06	325.2
Sulfate		391	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-03/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405874
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 0907
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		417	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.70	MG/L	09/26/06	353.2
Total Organic Carbon		1.62	MG/L	09/26/06	5310 C
Chloride		56.1	MG/L	10/05/06	325.2
Sulfate		384	MG/L	10/10/06	375.4

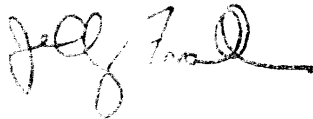
Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MAUNFAC

SAMPLERS COMMENTS:
MW-1000/GW03

ANALYST'S COMMENTS:



*

* ANALYST

Sample Number: 405875
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1035
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
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707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00012

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		224	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.17	MG/L	09/26/06	353.2
Total Organic Carbon		1.31	MG/L	09/26/06	5310 C
Chloride	<	10.0	MG/L	10/05/06	325.2
Sulfate		399	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

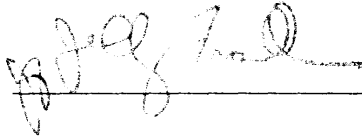
SAMPLERS COMMENTS:

MW-04/GW03; USE FOR MS/MSD

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405876
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1200
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK000112

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		318	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.45	MG/L	09/26/06	353.2
Chloride		21.5	MG/L	10/05/06	325.2
Sulfate		81.0	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-01/GW03

ANALYST'S COMMENTS:

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* ANALYST



Sample Number: 405877
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1240
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
SPA Drinking Water Certification #0000013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		342	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.71	MG/L	09/26/06	353.2
Chloride		800	MG/L	10/05/06	325.2
Sulfate		1970	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-02/GW03

ANALYST'S COMMENTS:

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* ANALYST



Sample Number: 405878
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1320
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

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STATE ENVIRONMENTAL LABORATORY
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OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)		5.50	MG/L	09/29/06	410.3
Alkalinity, Total		384	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.17	MG/L	09/26/06	353.2
Total Organic Carbon		1.82	MG/L	09/26/06	5310 C
Chloride		30.3	MG/L	10/05/06	325.2
Sulfate		2200	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

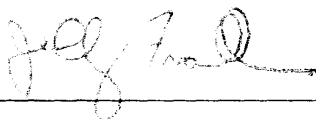
SAMPLERS COMMENTS:

MW-05/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405879
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1415
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		249	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N		0.16	MG/L	09/26/06	353.2
Total Organic Carbon		1.61	MG/L	09/26/06	5310 C
Chloride		14.6	MG/L	10/05/06	325.2
Sulfate		448	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

MW-06/GW03

ANALYST'S COMMENTS:

* ANALYST 

Sample Number: 405880
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/19/2006
Time Collected: 1415
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		326	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		1.73	MG/L	09/26/06	5310 C
Chloride		26.5	MG/L	10/05/06	325.2
Sulfate		839	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

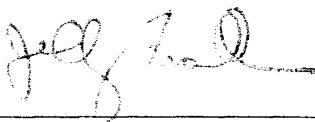
SAMPLERS COMMENTS:

MW-04D/GW03

ANALYST'S COMMENTS:

*

* ANALYST



Sample Number: 405881
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1000
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)		41.3	MG/L	09/29/06	410.3
Alkalinity, Total		110	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		13.4	MG/L	09/26/06	5310 C
Chloride		25.2	MG/L	10/05/06	325.2
Sulfate		14.4	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

FP-01/SW01

ANALYST'S COMMENTS:



* ANALYST _____

Sample Number: 405882
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1255
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)		44.8	MG/L	09/29/06	410.3
Alkalinity, Total		109	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		13.9	MG/L	09/26/06	5310 C
Chloride		25.2	MG/L	10/05/06	325.2
Sulfate		15.1	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

FP-02/SW01

ANALYST'S COMMENTS:



* ANALYST _____

Sample Number: 405883
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1255
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OKC0013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)		43.8	MG/L	09/29/06	410.3
Alkalinity, Total		110	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		13.8	MG/L	09/26/06	5310 C
Chloride		25.1	MG/L	10/05/06	325.2
Sulfate		15.8	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:
FP-1000/SW01

ANALYST'S COMMENTS:



* * ANALYST _____

Sample Number: 405884
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1338
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK00013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)		43.3	MG/L	09/29/06	410.3
Alkalinity, Total		109	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		13.8	MG/L	09/26/06	5310 C
Chloride		25.2	MG/L	10/05/06	325.2
Sulfate		15.5	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

FP-03/SW01

ANALYST'S COMMENTS:

*

* ANALYST 

Sample Number: 405885
Project Code: TF-LIQ
Agency Number:
Date Collected: 09/20/2006
Time Collected: 1720
Date Received: 09/22/2006
Date Completed: 10/13/2006
Collected By: DSB
PWS Id:
Location Code: 2W2
Station:
Facility:
Report Date: 11/14/2006

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE ENVIRONMENTAL LABORATORY
707 N. ROBINSON
OKLAHOMA CITY
OKLAHOMA, 73102-6010
General Inquiries: 1-800-869-1400
Sample Receiving: (405) 702-1113
Report of Analysis by General Chem.
EPA Drinking Water Certification #OK60013

To: LAND PROTECTION DIVISION
DENNIS DATIN, PROJECT MANAGER

CC: FILE COPY

Name	Qualifier	Value	Units	Analyzed	Method
Chemical Oxygen Demand (High)	<	5.00	MG/L	09/29/06	410.3
Alkalinity, Total		365	MG/L	09/27/06	310.2
Nitrogen, Nitrate as N	<	0.10	MG/L	09/26/06	353.2
Total Organic Carbon		1.66	MG/L	09/26/06	5310 C
Chloride		11.1	MG/L	10/05/06	325.2
Sulfate		45.9	MG/L	10/10/06	375.4

Labs performing analysis on this Sample:

Gen. Chem. Metals

SOURCE: TULSA FUEL & MANUFAC

SAMPLERS COMMENTS:

RW-01/GW03

ANALYST'S COMMENTS:



*

* ANALYST

STATE ENVIRONMENTAL LABORATORY

QUALITY CONTROL REPORT

GENERAL CHEMISTRY and METALS-LIQUIDS

Project: Tulsa Fuel II
 Project Code: TF-LIQ

Sample: **405875**

Units: mg/L			Blank	Fortified Blank (LFB)				LCS Dup			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)	Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	< 5	25	26.7	106.8	85-115%	107.8	107.8	0.0	<5	29.1	116.4	80-120%	<5	0.0	10%
T. Alkalinity	310.2	10	< 10	100	99	99.0	90-110%	102.0	103.5	102.8	224	311.0	87.0	80-120%	224	0.0	10%
NO3-Nitrogen	353.2	0.1	< 0.1	4	3.78	94.5	90-110%	99.5	100.0	0.5	0.17	3.96	94.8	80-120%	0.17	0.0	10%
Chloride	325.2	10	< 10	50	50.3	101.6	90-110%	99.6	98.8	0.8	9.5	60.9	102.8	80-120%	9.5	0.0	10%
Sulfate	375.4	10	< 10	60	60.6	101.0	90-110%	94.0	98.8	5.0	399	n/a	n/a	80-120%	395.0	1.1	10%
Total Organic Carbon	5310C	0.5	< 0.5	4.0	3.9	97.6	90-110%	100.0	101.0	1.0	1.31	5.5	105.0	80-120%	1.32	0.7	10%

Units: ug/L			Blank	Cal. Blank	LFB	IPC/LCS Dup			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)	(S1)	LFB %Rec	%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	< 10	< 10	102.8		104.6	101.4	3.1	<10	202.8	203.1	101.5	75-125%	0.2 25%
Cadmium	200.7	5	< 5	< 1	103.4		98.9	98.6	0.3	48	240.9	243.7	97.2	75-125%	1.2 25%
Lead	200.7	10	< 10	< 10	103.0		102.4	101.4	1.0	<10	194.8	196.3	97.8	75-125%	0.8 25%
Zinc	200.7	5	< 5	< 12	99.1		99	100.3	1.3	1830	1987	1995	80.5	75-125%	0.4 25%

COMMENTS:

The run dates differ between individual parameters and methods thus the dates of analysis are specific to each parameter and method throughout the entire report. Metals results are in ppb. All others are in mg/l. Sulfate MS was not included in this report as the sample concentration was over calibration range and had to be diluted and reanalyzed.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
60	25	9/29/2006	405873-405885
200	100	9/27/2006	405873-405885
2	4	9/26/2006	405873-405885
250	50	10/5/2006	405873-405885
250	60	10/10/2006	405873-405885
2.0	4	9/27/2006	405873-405885
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927

STATE ENVIRONMENTAL LABORATORY
QUALITY CONTROL REPORT
GENERAL CHEMISTRY and METALS-LIQUIDS

Project: Tulsa Fuel II
 Project Code: TF-LIQ

Sample: **405921**

Units: mg/L			Blank	Fortified Blank (LFB)				LCS			Sample	Matrix Spike (MS)			Duplicate		
Analyte	Method	PQL	(LRB)	Conc.	Result	%Rec	Limits	%Rec	%Rec	RPD		(MS)	%Rec	Limits	Matrix Dup (D)	Dup RPD	Limits
COD	410.3	5	< 5				85-115%							80-120%			10%
T. Alkalinity	310.2	10	< 10				90-110%							80-120%			10%
NO3-Nitrogen	353.2	0.05	< 0.05				90-110%							80-120%			10%
Chloride	325.2	10	< 10				90-110%							80-120%			10%
Sulfate	375.4	10	< 10				90-110%							80-120%			10%
Total Organic Carbon	5310C	0.5	< 0.5				90-110%							80-120%			10%

Units: ug/L			Blank	Cal. Blank	LFB		IPC/LCS			Sample	Matrix Spike (MS)/Spike Duplicate (MSD)					
Metals Analytes	Method	PQL	(LRB)	(S1)	LFB %Rec		%Rec	%Rec	RPD		MS	MSD	RPA	Limits	RPD	Limits
Arsenic	200.7	10	< 10	< 10	102.8		104.6	101.4	3.1	<10	198.5	202.8	100.4	75-125%	2.1	25%
Cadmium	200.7	5	< 5	< 1	103.4		98.9	98.6	0.3	47	234.3	238.8	94.8	75-125%	2.3	25%
Lead	200.7	10	< 10	< 10	103.0		102.4	101.4	1.0	<10	190.2	193.9	96.0	75-125%	1.9	25%
Zinc	200.7	5	< 5	< 12	99.1		99	100.3	1.3	1790	1924	1961	78.8	75-125%	1.9	25%

COMMENTS:

No General Chemistry parameters were assigned to this sample. Metals results are in ppb.

Analyte
COD
T. Alkalinity
NO ₃ -Nitrogen
Chloride
Sulfate
Total Organic Carbon
Arsenic
Cadmium
Lead
Zinc

LCS Level	Spike Level	Analysis date	Sample Range
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927
1000	200	10/12/2006	405873-405927

QC Data

Liquid Samples

STL Burlington

Blackberry / Vegetation Sample Results

SDG 108227

SDG 108227A

SDG 108237

SDG 108141

SDG 115168

STL Burlington Colchester, Vermont

Sample Data Summary
Package

SDG: 108227



NARRATIVE

STL Burlington
208 South Park Drive, Suite 1
Colchester, VT 05446

Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

August 16, 2005

Ms. Sharon Shelton
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

Re: Laboratory Project No. 25000
Case: 25000; SDG: 108227

Dear Ms. Shelton:

Enclosed are the analytical results for samples received by STL Burlington on June 30, 2005. This report is sequentially numbered starting with page 0001 and ending with page 0103. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 06/30/05 ETR No: 108227			
627784	BM-UBB-L	06/16/04	Tissue
627785	BM-UBB	06/16/04	Tissue
627786	BM-WBB	06/16/04	Tissue
627787	BM-WBB-R	06/16/04	Tissue
627788	EC-02/BR02U	06/28/05	Tissue
627789	EC-02/BR02W	06/28/05	Tissue
627790	EC-02/LV02U	06/28/05	Tissue
627791	EC-02/LV02W	06/28/05	Tissue
627792	EC-02/RT02W	06/28/05	Tissue
627793	EC-01/BR02U	06/28/05	Tissue
627794	EC-01/LV02U	06/28/05	Tissue
627795	EC-1000/LV02U	06/28/05	Tissue
627796	EC-01/BR02W	06/28/05	Tissue
627796DP	EC-01/BR02WREP	06/28/05	Tissue
627796MD	EC-01/BR02WMSD	06/28/05	Tissue
627797	EC-01/LV02W	06/28/05	Tissue
627798	EC-01/RT02W	06/28/05	Tissue
627799	BG-EC-01/BR01W	06/28/05	Tissue
627800	BG-EC-01/BR01U	06/28/05	Tissue
627801	BG-EC-01/BR01UDUP	06/28/05	Tissue
627802	BG-EC-01/LV01U	06/28/05	Tissue
627803	BG-EC-01/LV01W	06/28/05	Tissue
627804	BG-EC-01/RT01W	06/28/05	Tissue
627805	EB2		Water

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

Please note that the results for the samples in this delivery group are reported on a wet weight basis.

An equipment blank was generated at the time of tissue preparation/homogenization. This equipment blank was carried through the analytical process and the results reported on the same weight/weight basis as the samples. The analysis of the equipment blank yielded concentrations of Lead and Zinc that were below the reporting limit but exceeded the detection limit.

The metals analysis of the preparatory blanks designated PBS0719C and PBS0719D, which are associated with the original analyses of the samples in this delivery group yielded concentrations of Lead that exceeded the reporting limit. The associated samples were re-digested and re-analyzed. However, the blanks associated with this re-analysis yielded significantly higher results than the original. Insufficient sample remained for an additional re-digestions and analysis. Therefore the results from the original analysis have been formally presented. The raw data associated with the re-analysis is on file at the laboratory.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,



Don Dawicki
Project Manager

Enclosure

0001B (last alpha)

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

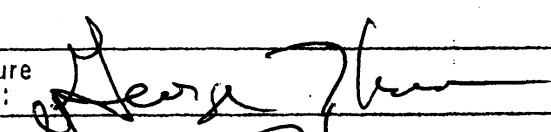
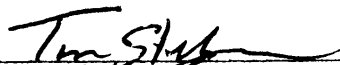




0002

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
TFM-WBB-L-1		6-16-04	0931					✓					
TFM-UGB-1		6-16-04	0936					✓					
TFM-UGB-1		6-16-04	0941					✓					
TFM-UGB-L-1		6-16-04	0946					✓					
TFM-BB-S-1		6-16-04	0951					✓					
TFM-WBB-R-1		6-16-04	0956					✓					
TFM-WBB-1		6-16-04	1001					✓					
TFM-BB-W-1		6-16-04	1006					✓					
Sampler's Signature (Relinquished by): <i>George Thomas</i>				Received by: <i>Tom Starn</i>									
Relinquished by: <i>George Thomas</i>				Received by: <i>WLD</i>									
Relinquished by: <i>Tom Starn</i>				Received by: <i>WLD</i> 6/30/05 0930									
Remarks:													

*Indicate the number of containers for each analysis in the proper column.

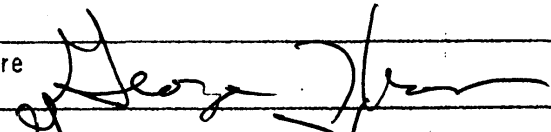
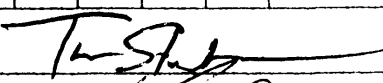

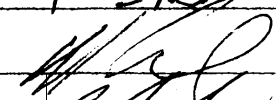
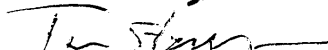
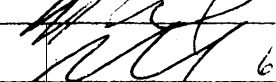
Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
TFM-WBB-L-2		6-22-04	0932										
TFM-UGB-2		6-22-04	0935										
TFM-UGB-2		6-22-04	0940										
TFM-UGB-L-2		6-22-04	0945										
TFM-BB-S-2		6-22-04	0950										
TFM-WBB-R-2		6-22-04	0955										
TFM-WBB-2		6-22-04	1000										
TFM-BB-W-2		6-22-04	1005										
Sampler's Signature (Relinquished by): 				Received by: 									
Relinquished by: 				Received by: 									
Relinquished by: 				Received by:  6/30/05 0930									

Remarks:

*Indicate the number of containers for each analysis in the proper column.

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
OX-WBB-R		6-16-04	1100					✓					
OX-WBB		6-16-04	1105					✓					
OX-WBB-L		6-16-04	1110					✓					
OX-UBB		6-16-04	1115					✓					
OX-BB-S		6-16-04	1120					✓					
OX-UBB-L		6-16-04	1125					✓					
OX-UGB		6-16-04	1130					✓					
Sampler's Signature (Relinquished by): 						Received by: 							
Relinquished by: 						Received by: 							
Relinquished by: 						Received by:  6/30/05 0930							

Remarks:

*Indicate the number of containers for each analysis in the proper column.

DEPARTMENT OF ENVIRONMENTAL QUALITY

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
BM-UGB		6-16-04	1145					✓					
BM-WBB-L		6-16-04	1150					✓					
BM-UBB-L		6-16-04	1155					✓					
BM-UBB		6-16-04	1200					✓					
BM-BB-S		6-16-04	1205					✓					
BM-WBB		6-16-04	1210					✓					
BM-WBB-R		6-16-04	1215					✓					
0006													
Sampler's Signature (Relinquished by): <i>George Z...</i>						Received by: <i>Tim St...</i>							
Relinquished by: <i>George Z...</i>						Received by: <i>[Signature]</i>							
Relinquished by: <i>TFM</i>						Received by: <i>[Signature]</i> 6/30/05 0830							
Remarks:													

*Indicate the number of containers for each analysis in the proper column.



STL

CHAIN OF CUSTODY RECORD

COC # KC 605392

Page: 1 of 3

QUOTE # 3054

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
W/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / BR02U		6/29/05	1050			1	X														
2	EC-02 / BR02W			1100			1	X														
3	EC-02 / LV02U			1105			1	X														
4	EC-02 / LV02W			1110			1	X														
5	EC-02 / S502			1120			1	X														
6	EC-02 / S502MS			1120			1	X														
7	EC-02 / S502MSD			1120			1	X														
8	EC-02 / S502			1125			1		X													
9	EC-02 / S502MS			1125			1		X													
10	EC-02 / S502MSD			1125			1		X													

Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):	
1. Relinquished by:	Date: 6/29/05	2. Received by:	Date: 6/29/05	3. Relinquished by:	Date: 6/29/05
Company:	0820	Company: STL-KC	Time: 0827	Company: STL-KC	Time: 15:27

Comments: BLACKBERRY SAMPLING AT TULSA FUELS PLEASE ATTEMPT TO RUN DUPLICATE ANALYSIS ON TJS	Standard turn	Other
	Rush turn	

Bar Ilington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003270



STL

CHAIN OF CUSTODY RECORD

QUOTE # 3054

COC # KC 685.446

Page 2 of 3**SEVERN TRENT LABORATORIES, INC.**

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
WO:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:		I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / RT02W		6/28/05	1130				X														
2	EC-01 / BR02V			1150				X														
3	EC-01 / LV02V			1153				X														
4	EC-1000 / LV02V			1155				X														
5	EC-01 / BR02W			1200				X														
6	EC-01 / LV02W			1205				X														
7	EC-01 / SS02			1210				X														
8	EC-01 / RT02W			1225				X														
9	BG-EC-01 / BR01W			1310				X														
10	BG-EC-01 / BR01V			1315				X														
Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):																		
1. Relinquished by: <i>T. Stecher</i>		Date: 6/29/05		2. Received by: <i>[Signature]</i>		Date: 6/29/05		3. Relinquished by: <i>[Signature]</i>		Date: 6/29/05		4. Received by: <i>[Signature]</i>		Date: 6/30/05								
Company: 0826		Company: STL-KC		Time: 0827		Company: STL-KC		Time: 15:27		Company: STL-B		Time: 0930										

Comments: PLEASE ATTEMPT TO COLLECT MS/MSD FROM EC-01 / BR02W. PLEASE ATTEMPT TO RUN DUPLICATE ANALYSIS ON BG-EC-01 / BR01V.	Standard turn	Other
	Rush turn	



STL

CHAIN OF CUSTODY RECORD

QUOTE # 3054

COC # KC 6(15892

Page: 1 of 3

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
P.O.:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
W/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	BG-EC-01/LVQIU		4/20/05	1320				X														
2	BG-EC-01/LVQIW			1325				X														
3	BG-EC-01/SS02			1330				X														
4	BG-EC-01/SS02			1335					X													
5	BG-EC-01/RTQIW			1345				X														
6																						
7																						
8																						
9																						
10																						

Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):	
1. Relinquished by:	Date:	2. Received by:	Date:	3. Relinquished by:	Date:
16-Ste	6/29/05	[Signature]	6/29/05	[Signature]	6/29/05
Company:	Time:	Company:	Time:	Company:	Time:
	0826	STL-KC	0827	STL-KC	15:27
4. Received by:	Date:	5. Received by:	Date:	6. Received by:	Date:
[Signature]	6/30/05	[Signature]	6/30/05	[Signature]	6/30/05
Company:	Time:	Company:	Time:	Company:	Time:
	0930	STL B			

Comments:	Standard turn	Other
	Rush turn	

Burlington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003272

Dawicki, Don

From: Sharon Shelton [sshelton@burnsmcd.com]
Sent: Thursday, June 30, 2005 10:36 AM
To: Dawicki, Don
Subject: Tulsa Fuel & Manufacturing

Hi Don -

Here's a summary of what we discussed this morning regarding the Tulsa Fuel & Manufacturing vegetation samples that you should receive today. .

Total Metals (As, Cd, Pb, & Zn) = EPA 6020 = Vegetation Samples (Berries, Leaves, Roots)
Total Metals (As, Cd, Pb, & Zn) = EPA 6010 = Soil Samples

Please add pH analysis for the following Samples

STL COCs

EC-02/SS02 (Please also use for lab QA/QC)

EC-01/SS02

BG-EC-01/SS02

Dept of Environmental Quality COCs

TFM-BB-S-1

TFM-BB-W-1

TFM-BB-S-2

TFM-BB-W-2

BM-BB-S

OX-BB-S

If there is sufficient volume, please add TCLP Analysis for As, Cd, & Pb for

Dept of Environmental Quality COCs

TFM-BB-W-1

TFM-BB-S-2

We were having trouble getting sufficient samples at one of our sampling locations planned for QA/QC. If there is sufficient volume, please perform a total metals MS/MSD using:

EC-01/BR02W

Also, if possible, please split the sample and analyze as a duplicate:

BG-EC-01/BR01U

Please let me know if there are any questions.

Thanks,
Sharon

Sharon Shelton
Environmental Chemist
Burns & McDonnell
phone (816) 822-3168
fax (816) 822-3494
sshelton@burnsmcd.com

10010

TFM-0003273



**Sample Data Summary Package
For Wet Chemistry**

0011

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Pages 0012 to 0012

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-UBB-L

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627784

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 40.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		40.3	

0013

Printed on: 07/30/05 11:25 AM

TFM-0003276

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-UBB

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627785

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 12.6

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		12.6	

U014

Printed on: 07/30/05 11:25 AM

TFM-0003277

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-WBB

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627786

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 13.4

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		13.4	

0015

Printed on: 07/30/05 11:25 AM

TFM-0003278

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-WBB-R

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627787

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 40.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		40.0	

0016

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-02/BR02U

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627788

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 16.4

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		16.4	

0127

Printed on: 07/30/05 11:25 AM

TFM-0003280

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-02/BR02W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627789

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 13.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		13.3	

LL18

Printed on: 07/30/05 11:25 AM

TFM-0003281

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-02/LV02U

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627790

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 44.7

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		44.7	

0019

Printed on: 07/30/05 11:25 AM

TFM-0003282

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-02/LV02W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627791

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 23.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		23.3	

020

Sample Report Summary

EC-02/RT02W

Contract:

Case No.: 25000

Client: BURMC1

% Solids: 44.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		44.0	

0024

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-01/BR02U

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627793

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 16.1

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		16.1	

0022

Printed on: 07/30/05 11:25 AM

TFM-0003285

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-01/LV02U

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627794

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 45.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		45.8	

0023

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-1000/LV02U

SDG No.: 108227

Lab Sample ID: 627795

Date Received: 06/30/05

% Solids: 45.7

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		45.7	

0024

Printed on: 07/30/05 11:25 AM

TFM-0003287

Sample Report Summary

Client Sample No.

EC-01/BR02W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627796

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 14.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		14.8	

00251

Printed on: 07/30/05 11:25 AM

TFM-0003288

WET CHEMISTRY

Duplicate Sample Report Summary

Client Sample No.

EC-01/BR02WREP

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627796DP

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 16.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	Sample Result Conc.	Sample Result Qual.	Duplicate Sample Result Conc.	Duplicate Sample Result Qual.	RPD*
IN623	Solids, Percent	07/26/05	N/A	%	14.8		16.8		13

* Control Limit for RPD is +/- 20%, unless otherwise specified.

0026

Printed on: 07/30/05 11:25 AM

TFM-0003289

Sample Report Summary

Client Sample No.

EC-01/LV02W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627797

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 22.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		22.5	

0027

Printed on: 07/30/05 11:25 AM

TFM-0003290

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-01/RT02W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627798

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 46.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		46.5	

0028

Printed on: 07/30/05 11:25 AM

TFM-0003291

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BG-EC-01/BR01W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627799

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 12.6

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		12.6	

0029

Printed on: 07/30/05 11:25 AM

TFM-0003292

Sample Report Summary

BG-EC-01/BR01U

SDG No.: 108227

Lab Sample ID: 627800

Date Received: 06/30/05

% Solids: 12.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		12.3	

6030

Printed on: 07/30/05 11:25 AM

TFM-0003293

WET CHEMISTRY

Sample Report Summary

BG-EC-01/BR01UDUP

Contract:

Case No.: 25000

Client: BURMC1

% Solids: 13.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		13.0	

0031

WET CHEMISTRY

Sample Report Summary

BG-EC-01/LV01U

% Solids: 39.4

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		39.4	

0032

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BG-EC-01/LV01W

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108227

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627803

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 15.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		15.0	

0033

Printed on: 07/30/05 11:25 AM

TFM-0003296



**Sample Data Summary Package
For Metals**

0034

USEPA - CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

SOW No.: _____

EPA Sample No.	Lab Sample ID.
BG-EC-01/BR01U	627800
BG-EC-01/BR01UDUP	627801
BG-EC-01/BR01W	627799
BG-EC-01/LV01U	627802
BG-EC-01/LV01W	627803
BG-EC-01/RT01W	627804
BM-UBB	627785
BM-UBB-L	627784
BM-WBB	627786
BM-WBB-R	627787
EB2	627805
EC-01/BR02U	627793
EC-01/BR02W	627796
EC-01/BR02WD	627796DP
EC-01/BR02WS	627796MS
EC-01/LV02U	627794
EC-01/LV02W	627797
EC-01/RT02W	627798
EC-02/BR02U	627788
EC-02/BR02W	627789
EC-02/LV02U	627790
EC-02/LV02W	627791
EC-02/RT02W	627792
EC-1000/LV02U	627795

Were ICP interelement corrections applied? Yes/No YESWere ICP background corrections applied? Yes/No YESIf yes-were raw data generated before
application of background corrections? Yes/No NOComments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

COVER PAGE - IN

TFM-0003298

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/BR01U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627800
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0083	U		MS
7440-43-9	Cadmium	0.0083	U		MS
7439-92-1	Lead	0.057	B		MS
7440-66-6	Zinc	1.5	B		P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/BR01UDUP

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627801
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0087	U		MS
7440-43-9	Cadmium	0.0087	U		MS
7439-92-1	Lead	0.077	B		MS
7440-66-6	Zinc	1.6	B		P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/BR01W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627799
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0081	U		MS
7440-43-9	Cadmium	0.0081	U		MS
7439-92-1	Lead	0.095	B		MS
7440-66-6	Zinc	1.4	B		P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/LV01U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627802
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.019	B		MS
7440-43-9	Cadmium	0.010	U		MS
7439-92-1	Lead	0.29			MS
7440-66-6	Zinc	8.1			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/LV01W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627803
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0078	U		MS
7440-43-9	Cadmium	0.0078	U		MS
7439-92-1	Lead	0.28			MS
7440-66-6	Zinc	5.0			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/RT01W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627804
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.096	B		MS
7440-43-9	Cadmium	0.0096	B		MS
7439-92-1	Lead	0.60			MS
7440-66-6	Zinc	8.6			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-UBB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627785
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0089	U		MS
7440-43-9	Cadmium	0.0089	U		MS
7439-92-1	Lead	0.18			MS
7440-66-6	Zinc	3.6			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-UBB-L

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627784
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0096	U		MS
7440-43-9	Cadmium	0.039	B		MS
7439-92-1	Lead	0.29			MS
7440-66-6	Zinc	27.6			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

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USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-WBB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627786
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0099	U		MS
7440-43-9	Cadmium	0.0099	U		MS
7439-92-1	Lead	0.19	B		MS
7440-66-6	Zinc	2.8			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-WBB-R

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627787
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.10	B		MS
7440-43-9	Cadmium	0.35			MS
7439-92-1	Lead	3.1			MS
7440-66-6	Zinc	71.5			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627805
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.010	U		MS
7440-43-9	Cadmium	0.010	U		MS
7439-92-1	Lead	0.048	B		MS
7440-66-6	Zinc	0.53	B		P

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/BR02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627793
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.029	B		MS
7440-43-9	Cadmium	0.0093	U		MS
7439-92-1	Lead	30.0			MS
7440-66-6	Zinc	5.6			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/BR02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627796
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0099	U		MS
7440-43-9	Cadmium	0.0099	U		MS
7439-92-1	Lead	0.41			MS
7440-66-6	Zinc	3.2			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/LV02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627794
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.047	B		MS
7440-43-9	Cadmium	0.036	B		MS
7439-92-1	Lead	1.8			MS
7440-66-6	Zinc	37.9			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/LV02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627797
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0085	U		MS
7440-43-9	Cadmium	0.018	B		MS
7439-92-1	Lead	0.75			MS
7440-66-6	Zinc	22.6			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/RT02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627798
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.17			MS
7440-43-9	Cadmium	0.56			MS
7439-92-1	Lead	4.3			MS
7440-66-6	Zinc	125			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

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USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/BR02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627788
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0093	U		MS
7440-43-9	Cadmium	0.044	B		MS
7439-92-1	Lead	0.90			MS
7440-66-6	Zinc	5.8			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/BR02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627789
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0089	U		MS
7440-43-9	Cadmium	0.043	B		MS
7439-92-1	Lead	0.76			MS
7440-66-6	Zinc	4.1			P

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/LV02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627790
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.43			MS
7440-43-9	Cadmium	0.32			MS
7439-92-1	Lead	24.5			MS
7440-66-6	Zinc	53.5			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/LV02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627791
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.12	B		MS
7440-43-9	Cadmium	0.15	B		MS
7439-92-1	Lead	7.9			MS
7440-66-6	Zinc	24.3			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/RT02W

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627792
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	8.5			P
7440-43-9	Cadmium	2.9			MS
7439-92-1	Lead	489			MS
7440-66-6	Zinc	599			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-1000/LV02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227
Matrix (soil/water): TISSUE Lab Sample ID: 627795
Level (low/med): LOW Date Received: 06/30/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.028	B		MS
7440-43-9	Cadmium	0.035	B		MS
7439-92-1	Lead	0.91			MS
7440-66-6	Zinc	29.9			P

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	250.0	256.30	102.5	100.0	96.14	96.1	96.20	96.2	P
Zinc	500.0	506.00	101.2	200.0	190.10	95.0	189.40	94.7	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

1058

Form II (Part 1) - IN

TFM-0003321

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				100.0	98.67	98.7	103.20	103.2	P
Zinc				200.0	190.70	95.4	191.20	95.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

1359

Form II (Part 1) - IN

TFM-0003322

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				100.0	102.60	102.6			P
Zinc				200.0	189.10	94.6			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	25.68	102.7	10.0	9.54	95.4	9.65	96.5	MS
Cadmium	25.0	24.53	98.1	10.0	9.65	96.5	9.80	98.0	MS
Lead	25.0	25.45	101.8	10.0	10.24	102.4	10.09	100.9	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227Initial Calibration Source: Inorganic Ventures/FisherContinuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				10.0	9.86	98.6	9.64	96.4	MS
Cadmium				10.0	9.46	94.6	9.39	93.9	MS
Lead				10.0	10.15	101.5	9.98	99.8	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

1082

Form II (Part 1) - IN

TFM-0003325

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead	25.0	26.42	105.7	10.0	9.74	97.4	9.90	99.0	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA - CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True Found %R			CRDL Standard for ICP					
				Initial			Final		
	True	Found	%R	True	Found	%R	Found	%R	
Arsenic				20.0	18.97	94.8			
Zinc				40.0	42.64	106.6			

Control Limits: no limits have been established by EPA at this time

0064

Form IIB-IN

TFM-0003327

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic	4.0 U	4.0	U	4.0	U	4.0	U	0.400	U	P
Zinc	4.3 U	4.3	U	4.3	U	4.3	U	0.504	B	P

1165

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		4.0	U	4.0	U					P
Zinc		4.3	U	4.3	U			1.703	B	P

1166

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Arsenic	0.1	U	0.1	U	0.1	U	-0.1	B	-0.011	B	MS
Cadmium	-0.2	B	-0.2	B	-0.3	B	-0.2	B	0.073	B	MS
Lead	0.1	U	0.1	U	0.1	U	0.1	U	0.354		MS

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank		
		1	2	3						
Arsenic		0.1	U					-0.011	B	MS
Cadmium		-0.2	B					0.118	B	MS
Lead		-0.1	B					0.380		MS

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	M
		1	2	3					
Lead	0.1 U	0.1 U	0.1 U						MS

USEPA - CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

ICP ID Number: TJA ICAP 6 ICS Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	101	1	98.5	97.5			
Zinc	0	987	-1	916.8	92.9			

USEPA - CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	20	0	18.7	93.5			
Cadmium	0	20	1	19.7	98.5			
Lead	0	20	1	22.5	112.5			

USEPA - CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Lead	0	20	1	22.9	114.5			

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USEPA - CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-01/BR02WS

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

Matrix (soil/water): TISSUE Level (low/med): LOW

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	80 - 120	0.7190	0.0099 U	0.85	84.6		MS
Cadmium	80 - 120	0.7215	0.0099 U	0.85	84.9		MS
Lead	80 - 120	1.2475	0.4079	0.85	98.8		MS
Zinc	80 - 120	11.8220	3.1891	8.47	101.9		P

Comments:

USEPA - CLP FORMS

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-01/BR02WA

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Matrix (soil/water): TISSUE Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic		8.04	0.10 U	10.0	80.4		MS
Cadmium		7.99	0.10 U	10.0	79.9		MS
Lead		14.13	4.12	10.0	100.1		MS
Zinc		490.80	32.21	500.0	91.7		P

Comments: _____

USEPA - CLP FORMS

6

DUPLICATES

SAMPLE NO.

EC-01/BR02WD

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Matrix (soil/water): TISSUE Level (low/med): LOW% Solids for Sample: 100.0 % Solids for Duplicate: 100.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		0.0099	U	0.0098	U			MS
Cadmium		0.0099	U	0.0098	U			MS
Lead	0.2	0.4079		0.4056		0.6		MS
Zinc	2.0	3.1891		3.5686		11.2		P

1075

USEPA - CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227
 Solid LCS Source: ERA lot249/USEPA 0996/ERA lot0899
 Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Arsenic				2.5	2.6		2.0 3.0	104.0
Zinc				25.0	26.1		20.0 30.0	104.4

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USEPA - CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227Solid LCS Source: ERA lot249/USEPA 0996/ERA lot0899Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Arsenic				2.5	2.1		2.0 3.0	84.0
Cadmium				2.5	2.2		2.0 3.0	88.0
Lead				2.5	2.8		2.0 3.0	112.0
Zinc				25.0	25.7		20.0 30.0	102.8

USEPA - CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227Solid LCS Source: ERA lot249/USEPA 0996/ERA lot0899Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Arsenic				2.5	2.1		2.0	3.0	84.0
Cadmium				2.5	2.1		2.0	3.0	84.0
Lead				2.5	2.6		2.0	3.0	104.0

0078

USEPA - CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-01/BR02WL

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108227Matrix (soil/water): TISSUE

Level (low/med):

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I) C			Serial Dilution Result (S) C			% Differ- ence	Q	M
Arsenic	0.10	U		0.50	U				MS
Cadmium	0.10	U		0.50	U				MS
Lead	4.12			3.48	B		15.5		MS
Zinc	32.21			40.16	B		24.7		P

USEPA - CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICAP 6 Date: 07/01/05

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	189.042		10	4.0	P
Zinc	206.200		20	4.3	P

Comments: _____

USEPA - CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICPMS X5 Date: 07/05/05

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Isotope	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	75		2	0.10	MS
Cadmium	111		2	0.10	MS
Lead	208		2	0.10	MS

Comments: _____

USEPA - CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Al	Ca	Fe	Mg	Ag
Aluminum	308.215	0.0000000	0.0000000	0.0002800	0.0002100	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000380	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000980	0.0000000	0.0001000	0.0000020	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000220	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000530	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	-0.0006800	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000080	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	-0.0001000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	-0.0000030	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000280	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000230	0.0000000	0.0000000

Comments: _____

USEPA - CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Be	Cd	Co
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0480000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	-0.0015000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	-0.0002400
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0000000	0.0021000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA - CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Cr	Cu	Mn	Mo	Na
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0011560	0.0000000
Antimony	206.838	-0.0008700	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	-0.0000190	0.0000000	0.0000000	0.0002340	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0009490	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0002600	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0038000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0019000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0005280	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0002540	0.0000000	0.0014400	0.0015000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000860	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA - CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Ni	Pb	P	Sb	Se
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000870	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0001100	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0005700	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	-0.0003200	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0002200	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA - CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Si	Sn	Sr	Ti	Tl
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0034000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000090	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0002000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001340	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0021600	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0013800	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0008000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0002400	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.1776000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0002500	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0004400	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA - CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227

ICP ID Number: TJA ICAP 6 Date: 01/20/05

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		V	Zn			
Aluminum	308.215	0.0265000	0.0000000			
Antimony	206.838	-0.0002800	0.0000000			
Arsenic	189.042	-0.0002800	0.0000000			
Barium	493.409	0.0000000	0.0000000			
Beryllium	313.042	0.0005800	0.0000000			
Boron	249.678	0.0000000	0.0000000			
Cadmium	226.502	0.0000000	0.0000000			
Calcium	317.933	0.0000000	0.0000000			
Chromium	267.716	-0.0001800	0.0000000			
Cobalt	228.616	0.0000000	0.0000000			
Copper	324.754	0.0000000	0.0000000			
Iron	271.441	0.0234500	0.0000000			
Lead	220.353	-0.0001140	0.0000000			
Magnesium	279.079	0.0000000	0.0000000			
Manganese	257.610	0.0000000	0.0000000			
Molybdenum	202.030	0.0000000	0.0000000			
Nickel	231.604	0.0000000	0.0000000			
Phosphorus	178.287	0.0000000	0.0146000			
Potassium	766.491	0.0000000	0.0000000			
Selenium	196.026	0.0000000	0.0000000			
Silver	328.068	-0.0001200	0.0000000			
Sodium	330.232	-0.1508200	0.0582800			
Strontium	421.552	0.0000000	0.0000000			
Thallium	190.864	0.0016200	0.0000000			
Tin	189.989	0.0000000	0.0000000			
Titanium	334.941	0.0000000	0.0000000			
Vanadium	292.402	0.0000000	0.0000000			
Zinc	206.200	-0.0001200	0.0000000			

Comments: _____

USEPA - CLP FORMS

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICAP 6 Date: 07/01/05

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	10.00	5000.0	P
Zinc	10.00	10000.0	P

Comments: _____

USEPA - CLP FORMS

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227ICP ID Number: TJA ICPMS X5 Date: 07/05/05

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	15.000	50.0	MS
Cadmium	15.000	200.0	MS
Lead	15.000	2000.0	MS

Comments: _____

USEPA - CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Method: MS

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
BM-UBB	07/19/05	1.12	100.0
BM-UBB-L	07/19/05	1.04	100.0
BM-WBB	07/19/05	1.01	100.0
BM-WBB-R	07/19/05	1.04	100.0
EC-01/BR02U	07/19/05	1.08	100.0
EC-01/BR02W	07/19/05	1.01	100.0
EC-01/BR02WD	07/19/05	1.02	100.0
EC-01/BR02WS	07/19/05	1.18	100.0
EC-01/LV02U	07/19/05	1.07	100.0
EC-01/LV02W	07/19/05	1.17	100.0
EC-02/BR02U	07/19/05	1.08	100.0
EC-02/BR02W	07/19/05	1.12	100.0
EC-02/LV02U	07/19/05	1.01	100.0
EC-02/LV02W	07/19/05	1.10	100.0
EC-02/RT02W	07/19/05	1.09	100.0
EC-1000/LV02U	07/19/05	1.13	100.0
LCSS0719C	07/19/05	1.00	100.0
PBS0719C	07/19/05	1.00	100.0

1090

USEPA - CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227Method: MS

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
BG-EC-01/BR01U	07/19/05	1.21	100.0
BG-EC-01/BR01UDUP	07/19/05	1.15	100.0
BG-EC-01/BR01W	07/19/05	1.24	100.0
BG-EC-01/LV01U	07/19/05	1.00	100.0
BG-EC-01/LV01W	07/19/05	1.29	100.0
BG-EC-01/RT01W	07/19/05	1.18	100.0
EB2	07/19/05	1.00	100.0
EC-01/RT02W	07/19/05	1.26	100.0
LCSS0719D	07/19/05	1.00	100.0
PBS0719D	07/19/05	1.00	100.0

1091

USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108227Instrument ID Number: TJA ICAP 6Method: PStart Date: 08/04/05End Date: 08/04/05

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N		
S0	1.00	1459				X																				X			
S	1.00	1503																											
S	1.00	1506				X																							
S	1.00	1510																								X			
ICV	1.00	1515				X																				X			
ICB	1.00	1519				X																				X			
ICSA	1.00	1524				X																				X			
ICSAB	1.00	1528				X																				X			
CRI	1.00	1532				X																				X			
CCV	1.00	1537				X																				X			
CCB	1.00	1541				X																				X			
PBS0719C	1.00	1545				X																				X			
LCSS0719C	1.00	1549				X																				X			
BM-UBB-L	1.00	1554																								X			
BM-UBB	1.00	1558																								X			
BM-WBB	1.00	1602																								X			
BM-WBB-R	1.00	1606																								X			
EC-02/BR02U	1.00	1611																								X			
EC-02/BR02W	1.00	1615																								X			
EC-02/LV02U	1.00	1619																								X			
EC-02/LV02W	1.00	1623																								X			
CCV	1.00	1627				X																				X			
CCB	1.00	1632				X																				X			
EC-02/RT02W	1.00	1636				X																				X			
EC-01/BR02U	1.00	1640																								X			
EC-01/LV02U	1.00	1644																								X			
EC-1000/LV02U	1.00	1649																								X			
EC-01/BR02W	1.00	1653																								X			
EC-01/BR02WL	5.00	1657																								X			
EC-01/BR02WA	1.00	1701																								X			
EC-01/BR02WD	1.00	1706																								X			
EC-01/BR02WS	1.00	1710																								X			
EC-01/LV02W	1.00	1714																								X			
CCV	1.00	1718				X																				X			
CCB	1.00	1723				X																				X			
PBS0719D	1.00	1727																								X			
LCSS0719D	1.00	1731																								X			
EC-01/RT02W	1.00	1735																								X			

USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 08/04/05 End Date: 08/04/05

EPA Sample No.	D/F	Time	% R	Analytes																					
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N
BG-EC-01/BR01W	1.00	1739																							X
BG-EC-01/BR01U	1.00	1744																							X
BG-EC-01/BR01UDUP	1.00	1748																							X
BG-EC-01/LV01U	1.00	1752																							X
BG-EC-01/LV01W	1.00	1756																							X
BG-EC-01/RT01W	1.00	1801																							X
EB2	1.00	1805																							X
CCV	1.00	1809				X																			X
CCB	1.00	1813				X																			X
ZZZZZZ	5.00	1818																							
CCV	1.00	1822				X																			X
CCB	1.00	1826				X																			X

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USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108227Instrument ID Number: TJA ICPMS X5Method: MSStart Date: 07/21/05End Date: 07/21/05

EPA Sample No.	D/F	Time	% R	Analytes																					
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K S	S E	A G	N A	T L	V N
STD0	1.00	0130				X			X						X										
STD1	1.00	0135				X			X						X										
STD2	1.00	0140				X			X						X										
STD3	1.00	0146				X			X						X										
ICV	1.00	0151				X			X						X										
ICB	1.00	0156				X			X						X										
ICSA	1.00	0202				X			X						X										
ICSAB	1.00	0207				X			X						X										
CCV	1.00	0212				X			X						X										
CCB	1.00	0218				X			X						X										
PBS0719C	1.00	0223				X			X						X										
LCSS0719C	1.00	0228				X			X						X										
BM-UBB-L	1.00	0233				X			X						X										
BM-UBB	1.00	0239				X			X						X										
BM-WBB	1.00	0244				X			X						X										
BM-WBB-R	1.00	0249				X			X						X										
EC-02/BR02U	1.00	0255				X			X						X										
EC-02/BR02W	1.00	0300				X			X						X										
EC-02/LV02U	1.00	0305				X			X						X										
EC-02/LV02W	1.00	0311				X			X						X										
CCV	1.00	0316				X			X						X										
CCB	1.00	0321				X			X						X										
EC-02/RT02W	1.00	0327							X																
EC-01/BR02U	1.00	0332				X			X						X										
EC-01/LV02U	1.00	0337				X			X						X										
EC-1000/LV02U	1.00	0343				X			X						X										
EC-01/BR02W	1.00	0348				X			X						X										
EC-01/BR02WL	5.00	0353				X			X						X										
EC-01/BR02WA	1.00	0358				X			X						X										
EC-01/BR02WD	1.00	0404				X			X						X										
EC-01/BR02WS	1.00	0409				X			X						X										
EC-01/LV02W	1.00	0414				X			X						X										
CCV	1.00	0420				X			X						X										
CCB	1.00	0425				X			X						X										
PBS0719D	1.00	0430				X			X						X										
LCSS0719D	1.00	0436				X			X						X										
EC-01/RT02W	1.00	0441				X			X						X										
BG-EC-01/BR01W	1.00	0446				X			X						X										

USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 07/21/05 End Date: 07/21/05

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A L	N T	T V	Z N	C N			
BG-EC-01/BR01U	1.00	0452				X			X					X															
BG-EC-01/BR01UDUP	1.00	0457				X			X					X															
BG-EC-01/LV01U	1.00	0502				X			X					X															
BG-EC-01/LV01W	1.00	0508				X			X					X															
BG-EC-01/RT01W	1.00	0513				X			X					X															
EB2	1.00	0518				X			X					X															
CCV	1.00	0524				X			X					X															
CCB	1.00	0529				X			X					X															

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USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 08/05/05 End Date: 08/05/05

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N	C N			
STD0	1.00	0851												X															
STD1	1.00	0856												X															
STD2	1.00	0901												X															
STD3	1.00	0907												X															
ICV	1.00	0912												X															
ICB	1.00	0917												X															
ICSA	1.00	0922												X															
ICSAB	1.00	0928												X															
CCV	1.00	0933												X															
CCB	1.00	0938												X															
EC-02/RT02W	500.00	0944												X															
ZZZZZZ	1.00	0949																											
ZZZZZZ	1.00	0954																											
ZZZZZZ	1.00	0959																											
ZZZZZZ	5.00	1004																											
ZZZZZZ	10.00	1010																											
ZZZZZZ	10.00	1015																											
ZZZZZZ	10.00	1020																											
ZZZZZZ	1.00	1025																											
ZZZZZZ	1.00	1031																											
CCV	1.00	1036												X															
CCB	1.00	1041												X															

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INORGANIC

SAMPLE PREPARATION

0197

STL BURLINGTON

HOMOG_PREP

CLIENT: **Burmel**
CASE: **25000**
SDG: **108227**
ETR: **108227**
DATE: **7/15/05**

ANALYST: **RKL**

STL ID	CLIENT ID	Add Biota to the tared labeled bottle.	Record # of specimens	Record pre-homogenization weight (grams).	Section sample 1-3" if necessary	Use knife/homogenizer, etc. to homogenize	Homogenize 2.0 min or until slurry.	Scrape excess biota from homogenizer into sample jar.	Weigh jar and record post-homogenization weight (grams)	Record method of homogenization for each sample (ie homogenizer, knives, etc.)
627805	EBLK 2	-	JFF	52.28	-	-	-	-	52.40	CLEVER/Homogenizer
627784	BM-UBB-L	LEAVES	JFF	31.31	JFF	JFF	JFF	JFF	29.73	CLEVER
627785	BM-UBB	BERRIES		52.48					49.20	Homogenizer
627786	BM-WBB	BERRIES		57.54					50.71	Homogenizer
627787	BM-WBB-R	ROOT		50.57					47.18	CLEVER
627788	EC-02/BRO24	BERRIES		103.88				Plus jar	93.73	Homogenizer
627789	EC-02/BRO24	BERRIES		113.82					103.55	Homogenizer
627790	EC-02/LV024	LEAVES		16.38					15.56	CLEVER
627791	EC-02/LV024	LEAVES		17.68					17.18	CLEVER
627792	EC-02/LV024	ROOT		15.38					13.68	CLEVER
627793	EC-01/BRO24	BERRIES	JFF	62.07	JFF	JFF	JFF	JFF	77.23	Homogenizer
627794	EC-01/LV024	LEAVES		11.83					10.73	CLEVER
627795	EC-01/LV024	LEAVES		10.59					10.05	CLEVER
627796	EC-01/BRO24	BERRIES		57.45					54.08	Homogenizer
627797	EC-01/LV024	LEAVES		37.35					35.00	CLEVER
627798	EC-01/RFO24	ROOTS		60.09					53.32	CLEVER
627799	BG-EC-01/BRO14	BERRIES		40.64					37.51	Homogenizer
627800	BG-EC-01/BRO14	BERRIES		35.72					32.71	Homogenizer
627802	BG-EC-01/LV014	LEAVES		85.0					7.95	CLEVER
627803	BG-EC-01/LV014	ROOTS		73.44					64.82	CLEVER
627804	BG-EC-01/RFO14	LEAVES		22.43					20.60	CLEVER

Homog_Prep

BURMCI 108227

METALS DIGESTION LOG

Specify	ILM04.1	ILM05.2	ILM05.3	200.7_DW	200.7	200.8_DW	200.8	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	3050-MS	TTMS	CEC	SAR	Other:	
Prep Date:	7-19-05	Matrix	S	LCS Lot #	ml-07110501		HCl Tag ID	/	
Start Time:	1205	Analyst	FJD	MS Lot #	ml-07110503		HNO3 Tag ID	ml-02-041-09	
Stop Time:	1620	Spike Analyst	FJD	Spike Added	.5 mL		Spike Witness		

[illegible]

1 Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Block Digester 1 7 °C Block Digester 4 7 °C
Block Digester 2 7 °C Block Digester 5 7 °C
Block Digester 3 92 °C

1:1 HCl Lot # 30% H₂O₂ Lot #
1:1 HNO₃ Lot # MP06290501 2% HNO₃ Lot #

BIOAIZ

FME002:04.08.05:2
STL Burlington

TFM-0003362

METALS DIGESTION LOG

Specify	ILM04.1	ILM05.2	ILM05.3	200.7_DW	200.7	200.8_DW	200.8	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	3050-MS	TTMS	CEC	SAR	Other:	
Prep Date:	7-19-05	Matrix	S	LCS Lot #	M1-07110501			HCl Tag ID	✓
Start Time:	1215	Analyst	KD	MS Lot #	M1-071010503			HNO3 Tag ID	M1-02-041009
Stop Time:	1630	Spike Analyst	N/A	Spike Added	N/A mL			Spike Witness	N/A

Lab ID	Digestion ¹ Amount	Final Volume	Before Digestion				After Digestion		Comments
			Color	Clarity	Texture	Artifacts	Color	Clarity	
PBS0719D	1.00	1.00							
LCSS0719D	1.00								
627718	1.26		Brown		Medium		Yellow	Clear	
627719	1.24		Red						
627800	1.21								
627801	1.15								
627802	1.00		Green						
627803	1.29								
627804	1.18		Brown						
627805	1.00		Colorless	Clear			Colorless		
Batch MS/SD was not performed due to insufficient sample volume									

1 Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Block Digester 1 1 °C Block Digester 4 5 °C
Block Digester 2 92 °C Block Digester 5 5 °C
Block Digester 3 — °C

1:1 HCl Lot # MPQ290501 30% H₂O₂ Lot #
1:1 HNO₃ Lot # 2% HNO₃ Lot #

Batch	MS/SD was not performed due to insufficient sample volume
-------	---

7-19a

BIOAIZ

FME002:04.08.05:2
STL Burlington



SAMPLE HANDLING

0101

ORIGIN ID: IXDA (913) 894-0700
MATTHEW COUNCIL
STL KANSAS CITY SERVICE CENTER
8407 NIEMAN RD

LENEXA, KS 662141528
UNITED STATES US

Ship Date: 29JUN05
Actual Wgt: 37.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

(802) 655-1203

STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

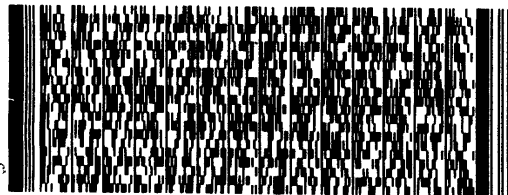
FedEx
Express



REF: green



Delivery Address
Barcode



BILL SENDER

STANDARD OVERNIGHT

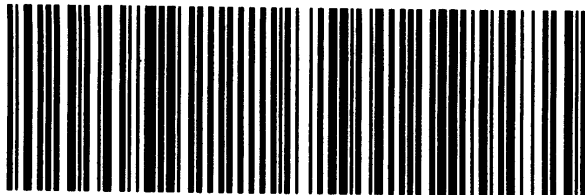
TRK# 6914 5415 3053 Form 0201

THU
Deliver By:
30JUN05

BTVA AA

05446 -VT-US

XH BTVA



Part # 156148-434 NRIT 10-04

ORIGIN ID: IXDA (913) 894-0700
MATTHEW COUNCIL
STL KANSAS CITY SERVICE CENTER
8407 NIEMAN RD

LENEXA, KS 662141528
UNITED STATES US

Ship Date: 29JUN05
Actual Wgt: 34.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

(802) 655-1203

STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

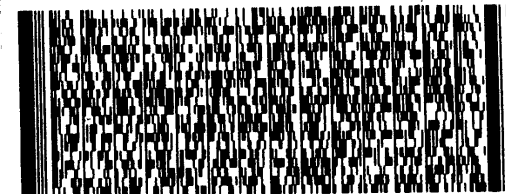
FedEx
Express



REF: green



Delivery Address
Barcode



BILL SENDER

STANDARD OVERNIGHT

TRK# 6914 5415 3042 Form 0201

THU
Deliver By:
30JUN05

BTVA AA

05446 -VT-US

XH BTVA



Part # 156148-434 NRIT 10-04

STL BURLINGTON SAMPLE RECEIPT & LOG IN CHECKLIST

Client: Bumci Date Received: 06.30.05 Log In Date: 7/7/05
 ETR: 108227 Time Received: 0930 By: Don Dawicki
 SDG: 108227 Received By: Don Dawicki Signature: [Signature]
 Project: Tulsa Fuels # Coolers Received: 2 PM Signature: [Signature]
 Samples Delivered By: ☒ Shipping Service ☐ Courier ☐ Hand ☐ Other (specify) _____ Date: 8/15/05
 List Air bill Number(s) or Attach a photocopy of the Air Bill: _____

COOLER SCREEN	YES	NO	NA	COMMENTS
Cooler screened with geiger counter and radioactivity is < 0.05 mr/hr	<input checked="" type="checkbox"/>			
There is <u>no</u> evidence to indicate tampering	<input checked="" type="checkbox"/>			
Custody seals are present and intact	<input checked="" type="checkbox"/>			
Custody seal numbers are present		<input checked="" type="checkbox"/>		

If yes, list custody seal numbers: _____

Thermal Preservation Type: ☒ Wet Ice ☐ Blue Ice ☐ None ☐ Other (specify) _____
 IR Gun ID: 25 Correction Factor (CF) = 7.0 °C

Cooler 1: <u>2</u> °C	Cooler 6: _____ °C	Cooler 11: _____ °C	Cooler 16: _____ °C
Cooler 2: <u>4</u> °C	Cooler 7: _____ °C	Cooler 12: _____ °C	Cooler 17: _____ °C
Cooler 3: _____ °C	Cooler 8: _____ °C	Cooler 13: _____ °C	Cooler 18: _____ °C
Cooler 4: _____ °C	Cooler 9: _____ °C	Cooler 14: _____ °C	Cooler 19: _____ °C
Cooler 5: _____ °C	Cooler 10: _____ °C	Cooler 15: _____ °C	Cooler 20: _____ °C

Unless otherwise documented, the recorded temperature readings are adjusted readings to account for the CF of the IR Gun

EPA Criteria: 0-6°C, except for air samples which should be at ambient temperature and tissue samples which may be frozen.

Some client programs require thermal preservation criteria of 2-4°C. The PM must notify SM when alternate criteria is specified.

SAMPLE CONDITION	YES	NO	NA	COMMENTS
Sample containers were received intact	<input checked="" type="checkbox"/>			
Legible sample labels are affixed to each container	<input checked="" type="checkbox"/>			

CHAIN OF CUSTODY (COC)	YES	NO	NA	COMMENTS
COC is present and includes the following information for each container:				

• Sample ID / Sample Description	<input checked="" type="checkbox"/>			
• Date of Sample Collection	<input checked="" type="checkbox"/>			
• Time of Sample Collection	<input checked="" type="checkbox"/>			
• Identification of the Sampler	<input checked="" type="checkbox"/>			
• Preservation Type	<input checked="" type="checkbox"/>			
• Requested Tests Method(s)	<input checked="" type="checkbox"/>			
• Necessary Signatures	<input checked="" type="checkbox"/>			

SAMPLE INTEGRITY / USABILITY	YES	NO	NA	COMMENTS
The sample container matches the COC	<input checked="" type="checkbox"/>			
Appropriate sample containers were received for the tests requested	<input checked="" type="checkbox"/>			
Samples were received within holding time	<input checked="" type="checkbox"/>			
Sufficient amount of sample is provided for requested analyses	<input checked="" type="checkbox"/>			
VOA vials do not have headspace or a bubble >6mm (1/4" diameter)				
Appropriate preservatives were used for the tests requested				
pH of inorganic samples checked and is within method specification				

If no, attach Inorganic Sample pH Adjustment Form

ANOMALY / NCR SUMMARY

See attached email for additional analysis requests

STL Burlington
Colchester, Vermont

Sample Data Summary
Package

SDG: 108227A



NARRATIVE

STL Burlington208 South Park Drive, Suite 1
Colchester, VT 05446Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

October 24, 2005

Ms. Sharon Shelton
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114Re: Laboratory Project No. 25000
Case: 25000; SDG: 108227A

Dear Ms. Shelton:

Enclosed are the analytical results for samples received by STL Burlington on October 3, 2005. This report is sequentially numbered starting with page 0001 and ending with page 0023. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 10/03/05 ETR No: 110110			
627788B	EC-02/BR02U	06/28/05	Tissue
627793B	EC-01/BR02U	06/28/05	Tissue

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

The enclosed submittal includes the results from metals re-analyses associated with samples originally reported in SDG 108227. Please refer to SDG 108227 for the original sample handling documentation. Please note that the samples were maintained in a frozen state during the entire storage period

The samples referenced above were re-digested and re-analyzed at the client's request due to the suspicion that these samples were inadvertently switched at some point between field sampling and reporting of the results. The re-analyses yielded results that generally confirmed the original results, with the exception of sample EC-01/BR02U, which yielded a significantly lower result for Lead in the re-analysis. The laboratory suspects that the original Lead result for this sample was elevated due to laboratory contamination caused by a large number of high concentration Lead samples being processed at this time. Therefore, the laboratory feels that the Lead result from the re-analysis of this sample should be used in place of the original result for this sample.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,



Don Dawicki
Project Manager

Enclosure

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric



Sample Data Summary Package For Metals

USEPA - CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A

SOW No.: _____

EPA Sample No.	Lab Sample ID.
<u>EC-01/BR02U</u>	<u>627793B</u>
<u>EC-02/BR02U</u>	<u>627788B</u>

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

COVER PAGE - IN

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/BR02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
Matrix (soil/water): SOIL Lab Sample ID: 627793B
Level (low/med): LOW Date Received: 10/03/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0088	U		MS
7440-43-9	Cadmium	0.0088	U		MS
7439-92-1	Lead	0.090	B		MS
7440-66-6	Zinc	2.1			MS

Color Before: red Clarity Before: _____ Texture: mediumColor After: colorless Clarity After: clear Artifacts: _____Comments: _____

Form I - IN

USEPA - CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/BR02U

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
Matrix (soil/water): SOIL Lab Sample ID: 627788B
Level (low/med): LOW Date Received: 10/03/05
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.011	B		MS
7440-43-9	Cadmium	0.061	B		MS
7439-92-1	Lead	0.73			MS
7440-66-6	Zinc	3.6			MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

Form I - IN

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227A
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Zinc	50.0	50.21	100.4	20.0	21.03	105.2	20.90	104.5	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Zinc				20.0	20.90	104.5			MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227A

Initial Calibration Source: Inorganic Ventures/Fisher

Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	24.91	99.6	10.0	10.28	102.8	10.29	102.9	MS
Cadmium	25.0	24.55	98.2	10.0	10.30	103.0	10.07	100.7	MS
Lead	25.0	24.38	97.5	10.0	10.47	104.7	9.80	98.0	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA - CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				10.0	10.36	103.6			MS
Cadmium				10.0	10.01	100.1			MS
Lead				10.0	9.93	99.3			MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
 Preparation Blank Matrix (soil/water): SOIL
 Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	M
		1	2	3					
Zinc	-1.3	-1.3	-1.3	-1.1	-0.112				

Form III - IN

USEPA - CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108227APreparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		M
			1	C	2	C	3	C		C	
Arsenic	-0.1	B	-0.1	B	-0.1	B	-0.1	B	-0.013	B	MS
Cadmium	0.1	U	0.1	U	-0.1	B	0.1	U	-0.018	B	MS
Lead	0.1	U	0.3	B	-0.1	B	-0.1	B	0.010	U	MS

Form III - IN

USEPA - CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures
Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Zinc	0	100	7	92.3	92.3			

Form IV - IN

USEPA - CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures
Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	20	-1	17.9	89.5			
Cadmium	0	20	0	19.9	99.5			
Lead	0	20	3	22.5	112.5			

Form IV - IN

USEPA - CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227A

Solid LCS Source: Inorganic Ventures

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Zinc				5.0	4.0		4.0	6.0
							80.0	

Form VII - IN

USEPA - CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A
 Solid LCS Source: Inorganic Ventures
 Aqueous LCS Source: _____

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Arsenic				2.5	2.1		2.0 3.0	84.0	
Cadmium				2.5	2.2		2.0 3.0	88.0	
Lead				2.5	2.6		2.0 3.0	104.0	

Form VII - IN

USEPA - CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-02/BR02UL

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108227AMatrix (soil/water): SOIL

Level (low/med):

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
	C			C					
Arsenic	0.13	B		0.50	U		100.0		MS
Cadmium	0.74	B		0.50	U		100.0		MS
Lead	8.95			8.92	B		0.3		MS
Zinc	38.84			41.05	B		5.7		MS

Form IX - IN

USEPA - CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227AICP ID Number: TJA ICPMS X5 Date: 10/05/05

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Isotope	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	75		2	0.10	MS
Cadmium	111		2	0.10	MS
Lead	208		2	0.10	MS
Zinc	66		20	0.40	MS

Comments: _____

Form X - IN

USEPA - CLP FORMS

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227AICP ID Number: TJA ICPMS X5 Date: 10/01/05

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	15.000	50.0	MS
Cadmium	15.000	50.0	MS
Lead	15.000	50.0	MS
Zinc	15.000	100.0	MS

Comments: _____

Form XII - IN

USEPA - CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108227AMethod: MS

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
EC-01/BR02U	10/10/05	1.14	100.0
EC-02/BR02U	10/10/05	1.22	100.0
LCSS101005A	10/10/05	1.00	100.0
PBS101005A	10/10/05	1.00	100.0

Form XIII - IN

USEPA - CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227AMethod: MS

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
EC-01/BR02U	10/12/05	1.08	100.0
EC-02/BR02U	10/12/05	1.07	100.0
LCSS101205B	10/12/05	1.00	100.0
PBS101205B	10/12/05	1.00	100.0

Form XIII - IN

USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 10/13/05 End Date: 10/13/05

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N		
STD0	1.00	1140																								X			
STD1	1.00	1146																								X			
STD2	1.00	1151																								X			
STD3	1.00	1157																								X			
ICV	1.00	1202																								X			
ICB	1.00	1208																								X			
ICSA	1.00	1213																								X			
ICSAB	1.00	1219																								X			
CCV	1.00	1225																								X			
CCB	1.00	1230																								X			
ZZZZZZ	1.00	1236																											
ZZZZZZ	1.00	1241																											
ZZZZZZ	1.00	1246																											
ZZZZZZ	5.00	1252																											
ZZZZZZ	1.00	1257																											
ZZZZZZ	5.00	1303																											
ZZZZZZ	1.00	1308																											
ZZZZZZ	1.00	1314																											
ZZZZZZ	1.00	1319																											
ZZZZZZ	5.00	1325																											
CCV	1.00	1330																								X			
CCB	1.00	1336																								X			
ZZZZZZ	1.00	1341																											
ZZZZZZ	1.00	1347																											
ZZZZZZ	1.00	1352																											
ZZZZZZ	1.00	1358																											
PBS101205B	1.00	1403																								X			
LCSS101205B	1.00	1409																								X			
EC-02/BR02U	1.00	1414																								X			
EC-02/BR02UL	5.00	1420																								X			
EC-01/BR02U	1.00	1425																								X			
ZZZZZZ	1.00	1431																											
CCV	1.00	1436																								X			
CCB	1.00	1442																								X			

Form XIV - IN

USEPA - CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108227A

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 10/10/05 End Date: 10/10/05

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	A L	T L	V N	Z N	C N		
STD0	1.00	1721				X			X					X															
STD1	1.00	1727				X			X					X															
STD2	1.00	1732				X			X					X															
STD3	1.00	1738				X			X					X															
ICV	1.00	1743				X			X					X															
ICB	1.00	1749				X			X					X															
ICSA	1.00	1754				X			X					X															
ICSAB	1.00	1800				X			X					X															
CCV	1.00	1805				X			X					X															
CCB	1.00	1811				X			X					X															
ZZZZZZ	10.00	1816																											
ZZZZZZ	50.00	1822																											
ZZZZZZ	10.00	1827																											
ZZZZZZ	10.00	1833																											
ZZZZZZ	10.00	1838																											
ZZZZZZ	10.00	1844																											
ZZZZZZ	10.00	1849																											
ZZZZZZ	10.00	1855																											
ZZZZZZ	10.00	1900																											
ZZZZZZ	10.00	1906																											
CCV	1.00	1911				X			X					X															
CCB	1.00	1917				X			X					X															
ZZZZZZ	10.00	1922																											
ZZZZZZ	10.00	1928																											
ZZZZZZ	10.00	1933																											
PBS101005A	1.00	1938				X			X					X															
LCSS101005A	1.00	1944				X			X					X															
EC-02/BR02U	1.00	1949				X			X					X															
EC-02/BR02UL	5.00	1955				X			X					X															
EC-01/BR02U	1.00	2000				X			X					X															
ZZZZZZ	1.00	2006																											
ZZZZZZ	1.00	2011																											
CCV	1.00	2017				X			X					X															
CCB	1.00	2022				X			X					X															

Form XIV - IN

STL Burlington Colchester, Vermont

Sample Data Summary
Package

SDG: 108237



NARRATIVE

0001

STL Burlington
208 South Park Drive, Suite 1
Colchester, VT 05446

Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

August 17, 2005

Ms. Sharon Shelton
Burns & McDonnell
9400 Ward Parkway
585 Pine Street
Kansas City, MO 64114

Re: Laboratory Project No. 25000
Case: 25000; SDG: 108237

Dear Ms. Shelton:

Enclosed are the analytical results for samples received by STL Burlington on June 30, 2005. This report is sequentially numbered starting with page 0001 and ending with page 0094. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 06/30/05 ETR No: 108237			
627858	TFM-BB-S-1	06/16/04	Soil
627859	TFM-BB-W-1	06/16/04	Soil
627860	TFM-BB-W-1	06/16/04	TCLP Ext
627861	TFM-BB-S-2	06/22/04	Soil
627862	TFM-BB-S-2	06/22/04	TCLP Ext
627863	TFM-BB-W-2	06/22/04	Soil
627864	OX-BB-S	06/16/04	Soil
627865	BM-BB-S	06/16/04	Soil
627866	EC-02/SS02	06/28/05	Soil
627866DP	EC-02/SS02REP	06/28/05	Soil
627866MS	EC-02/SS02MS	06/28/05	Soil
627867	EC-02/SS02	06/28/05	TCLP Ext
627867MS	EC-02/SS02MS	06/28/05	TCLP Ext
627868	EC-01/SS02	06/28/05	Soil
627869	BG-EC-01/SS02	06/28/05	Soil
627870	EB-EC-01/SS02	06/28/05	TCLP Ext

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

The metals analyses of the preparatory blanks associated with the soil samples in this delivery group yielded concentrations of Lead that exceeded the reporting limit. All of the samples with concentrations of Lead that were greater than ten times the concentrations in the blanks were formally reported. All other samples were re-digested and re-analyzed yielding acceptable results.

The calibration check standards designated CCV3, CCV4, and CCV5, associated with the ICP 6 analysis from 08/06/05 yielded elevated recoveries for Lead. However, the samples associated with these check standards yielded very high Lead concentrations and the results from this analytical sequence have been formally reported.

The metals analysis of the replicate associated with sample EC-02/SS02 yielded a Relative Percent Difference (RPD) for Arsenic that exceeded control criteria.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,



Don Dawicki
Project Manager

Enclosure

0001B (last alpha)

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

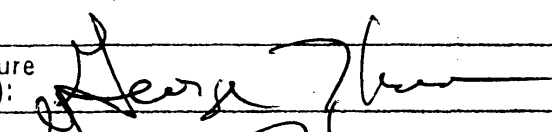

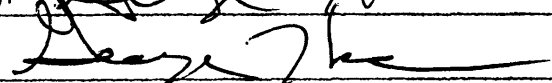



Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

Remarks:

TFM-0003398

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
TFM-WBB-L-2		6-22-04	0932										
TFM-UGB-2		6-22-04	0935										
TFM-UBB-2		6-22-04	0940										
TFM-UBB-L-2		6-22-04	0945										
TFM-BB-S-2		6-22-04	0952										
TFM-WBB-R-2		6-22-04	0955										
TFM-WBB-2		6-22-04	1000										
TFM-BB-W-2		6-22-04	1005										
Sampler's Signature (Relinquished by): 				Received by: 									
Relinquished by: 				Received by: 									
Relinquished by: 				Received by:  6/30/05 0930									

Remarks:

*Indicate the number of containers for each analysis in the proper column.

Sampler's Signature
(Relinquished by):

Relinquished by:

Relinquished by:

Remarks:

*Indicate the number of containers for each analysis in the proper column.

Sampler's Signature
(Relinquished by): -

Relinquished by:

Relinquished by:

Remarks:

*Indicate the number of containers for each analysis in the proper column.

Received by:

Received by:

Received by:

6/30/05 0930



STL

CHAIN OF CUSTODY RECORD

COC # KC 605392

Page: 1 of 3

QUOTE # 3054

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
P.O.:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
W/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	
Fax:	816.822.3494	Fax:		J	
				Other:	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / BR02V		6/29/05	1050			1	X														
2	EC-02 / BR02W			1100			1	X														
3	EC-02 / LV02V			1105			1	X														
4	EC-02 / LV02W			1110			1	X														
5	EC-02 / SS02			1120			1	X														
6	EC-02 / SS02MS			1120			1	X														
7	EC-02 / SS02MSD			1120			1	X														
8	EC-02 / SS02			1125			1		X													
9	EC-02 / SS02MS			1125			1		X													
10	EC-02 / SS02MSD			1125			1		X													

Sampler: T. STECHER		Shipment Method: EXP EX		Date Due (fax):	
1. Relinquished by:	Date: 6/29/05	2. Received by:	Date: 6/29/05	3. Relinquished by:	Date: 6/29/05
Company:	0820	Company:	STL-KC	Company:	STL-KC
			0827		15:27
					STL-B
					0930

Comments:

BLACKBERRY SAMPLING AT TULSA FUELS
 PLEASE ATTEMPT TO RUN DURLOUPE ANALYSIS ON TJS

Standard turn

Other

Rush turn

Bar Hington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003402



STL

CHAIN OF CUSTODY RECORD

QUOTE # 3054

COC # KC 685.146

Page 2 of 3

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
WO:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:		I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / RT02W		6/28/05	1130				X														
2	EC-01 / BR02V			1150				X														
3	EC-01 / LV02V			1153				X														
4	EC-1000 / LV02V			1155				X														
5	EC-01 / BR02W			1200				X														
6	EC-01 / LV02W			1205				X														
7	EC-01 / SS02			1210				X														
8	EC-01 / RT02W			1225				X														
9	BG-EC-01 / BR01W			1310				X														
10	BG-EC-01 / BR01V			1315				X														

Sampler: T. STECHER Shipment Method: FedEx Date Due (fax):

1. Relinquished by: J. S. N.	Date: 6/29/05	2. Received by: [Signature]	Date: 6/29/05	3. Relinquished by: [Signature]	Date: 6/29/05	4. Received by: [Signature]	Date: 6/30/05
Company: 0826	Time: 0826	Company: STL-KC	Time: 0827	Company: STL-KC	Time: 15:27	Company: STL-B	Time: 0930

Comments:

PLEASE ATTEMPT TO COLLECT MS/MSD FROM EC-01 / BR02W.

PLEASE ATTEMPT TO RUN DUPLICATE ANALYSIS ON BG-EC-01 / BR01V.

Standard turn Other

Rush turn

Burlington

Severn Trent Laboratories Inc

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1244

Project Manager: Don Dawicki

TFM-0003403



STL

CHAIN OF CUSTODY RECORD

QUOTE # 3054

COC # KC 605892

Page: 3 of 3

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
N/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway	Address:	SAME	E	
	Kansas City, MO 64114			F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	BG-EC-01/LVQ1U		6/28/05	1320				X														
2	BG-EC-01/LVQ1W			1325				X														
3	BG-EC-01/SS02			1330				X														
4	BG-EC-01/SS02			1335					X													
5	BG-EC-01/RTQ1W			1345				X														
6																						
7																						
8																						
9																						
10																						

Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):	
1. Relinquished by:	Date:	2. Received by:	Date:	3. Relinquished by:	Date:
Sharon Shelton	6/29/05	[Signature]	6/29/05	[Signature]	6/29/05
Company:	Time:	Company:	Time:	Company:	Time:
	0826	STL-KC	0827	STL-KC	15:27
4. Received by:	Date:	5. Relinquished by:	Date:	6. Received by:	Date:
[Signature]	6/30/05	[Signature]	6/30/05	[Signature]	6/30/05
Company:	Time:	Company:	Time:	Company:	Time:
	0930	STL B			

Comments:	Standard turn	Other
	Rush turn	

Burlington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003404



**Sample Data Summary Package
For Wet Chemistry**

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-BB-S-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627858

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 85.1

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		85.1	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	6.6	

Printed on: 07/30/05 11:14 AM

TFM-0003406

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-BB-W-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627859

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 97.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		97.3	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	6.9	

112

Printed on: 07/30/05 11:14 AM

TFM-0003407

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-BB-S-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627861

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 81.6

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		81.6	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	7.0	

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-BB-W-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627863

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 90.7

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		90.7	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	7.0	

WET CHEMISTRY

Sample Report Summary

OX-BB-S

Contract:

Case No.: 25000

Lab Sample ID: 627864

Client: BURMC1

Date Received: 06/30/05

% Solids: 80.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		80.8	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	5.6	

WET CHEMISTRY

Sample Report Summary

BM-BB-S

SDG No.: 108237

Lab Sample ID: 627865

Date Received: 06/30/05

% Solids: 81.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		81.0	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	5.7	

Printed on: 07/30/05 11:14 AM

TFM-0003411

WET CHEMISTRY

Sample Report Summary

Client Sample No. _____

EC-02/SS02

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627866

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 91.9

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		91.9	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	6.8	

Printed on: 07/30/05 11:14 AM

TFM-0003412

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EC-01/SS02

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627868

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 84.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		84.5	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	6.6	

128

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BG-EC-01/SS02

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627869

Matrix: SOIL

Client: BURMC1

Date Received: 06/30/05

% Solids: 83.2

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/12/05	N/A	%	1.0		83.2	
9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	1	0.0	6.8	

113

Printed on: 07/30/05 11:14 AM

TFM-0003414

WET CHEMISTRY

Method Blank Report Summary

Contract:

SDG No.: 108237

Case No.: 25000

Client: BURMC1

% Solids:

Lab Sample ID	Method	Parameter	Conc.	Units	Qual.	DF	RL	Analytical Run Date	Analytical Batch
BLKPH0708A	9045	Soil pH (std. units)	6.1	pH Units		1	0.0	07/08/05	BLKPH0708A

20

WET CHEMISTRY

Laboratory Control Sample Report Summary

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108237

Lab Code: STLVT

Case No.: 25000

Matrix: SOIL

Client: BURMC1

% Solids:

Lab Sample ID	Method	Parameter	Analytical Run Date	Analytical Batch	Units	LCS Conc.	True Value	% Rec.	Control Limit
LCSPH0708A	9045	Soil pH (std. units)	07/08/05	BLKPH0708A	pH Units	6.0	6.0	100	99-101

15512



Sample Data Summary Package For Metals

USEPA-CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

SOW No.: _____

EPA Sample No.	Lab Sample ID.
BG-EC-01/SS02	627869
BM-BB-S	627865
EB-EC-01/SS02 TCLP	627870
EC-01/SS02	627868
EC-02/SS02	627866
EC-02/SS02 TCLP	627867
EC-02/SS02 TCLP S	627867MS
EC-02/SS02D	627866DP
EC-02/SS02S	627866MS
OX-BB-S	627864
TFM-BB-S-1	627858
TFM-BB-S-2	627861
TFM-BB-S-2 TCLP	627862
TFM-BB-W-1	627859
TFM-BB-W-1 TCLP	627860
TFM-BB-W-2	627863

Were ICP interelement corrections applied? Yes/No YESWere ICP background corrections applied? Yes/No YESIf yes-were raw data generated before
application of background corrections? Yes/No NOComments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: 24 _____

COVER PAGE - IN

TFM-0003419

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BG-EC-01/SS02

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627869
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 83.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	5.5		*	P
7440-43-9	Cadmium	0.43	B		P
7439-92-1	Lead	11.8			P
7440-66-6	Zinc	42.9			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: cloudy Artifacts: _____

Comments:

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-BB-S

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627865
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	6.8		*	P
7440-43-9	Cadmium	1.8			P
7439-92-1	Lead	65.2			P
7440-66-6	Zinc	211			P

Color Before: brown Clarity Before: _____ Texture: mediumColor After: yellow Clarity After: cloudy Artifacts: _____Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB-EC-01/SS02 TCLP

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): TCLP EXT Lab Sample ID: 627870
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	6.6	B		P
7440-43-9	Cadmium	0.82	B		P
7439-92-1	Lead	2.7	B		P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01/SS02

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627868
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 84.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	5.7		*	P
7440-43-9	Cadmium	3.1			P
7439-92-1	Lead	79.7			P
7440-66-6	Zinc	377			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: cloudy Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/SS02

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627866
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 91.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1170		*	P
7440-43-9	Cadmium	77.2			P
7439-92-1	Lead	38000			P
7440-66-6	Zinc	38200			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02/SS02 TCLP

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): TCLP EXT Lab Sample ID: 627867
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	400	U		P
7440-43-9	Cadmium	860			P
7439-92-1	Lead	192000			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-BB-S

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627864
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 80.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	5.5		*	P
7440-43-9	Cadmium	0.40	B		P
7439-92-1	Lead	12.9			P
7440-66-6	Zinc	35.6			P

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: cloudy Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-BB-S-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627858
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 85.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	908		*	P
7440-43-9	Cadmium	71.0			P
7439-92-1	Lead	45400			P
7440-66-6	Zinc	43100			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-BB-S-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627861
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 81.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	961		*	P
7440-43-9	Cadmium	61.0			P
7439-92-1	Lead	36000			P
7440-66-6	Zinc	96800			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-BB-S-2 TCLP

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): TCLP EXT Lab Sample ID: 627862
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	400	U		P
7440-43-9	Cadmium	760			P
7439-92-1	Lead	360000			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

-1-

EPA SAMPLE NO.

TFM-BB-W-1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	968		*	P
7440-43-9	Cadmium	29.3	B		P
7439-92-1	Lead	24400			P
7440-66-6	Zinc	82000			P

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-BB-W-1 TCLP

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): TCLP EXT Lab Sample ID: 627860
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	400	U		P
7440-43-9	Cadmium	585			P
7439-92-1	Lead	322000			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-BB-W-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): SOIL Lab Sample ID: 627863
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 90.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	735		*	P
7440-43-9	Cadmium	60.2			P
7439-92-1	Lead	21500			P
7440-66-6	Zinc	22800			P

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments: _____

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	250.0	259.40	103.8	100.0	102.60	102.6	105.60	105.6	P
Cadmium	500.0	491.50	98.3	100.0	96.46	96.5	96.39	96.4	P
Lead	1000.0	1012.00	101.2	400.0	402.40	100.6	399.80	100.0	P
Zinc	500.0	497.60	99.5	200.0	192.30	96.2	193.10	96.6	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237Initial Calibration Source: Inorganic Ventures/FisherContinuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				100.0	100.10	100.1	101.30	101.3	P
Cadmium				100.0	97.25	97.2	97.02	97.0	P
Lead				400.0	403.70	100.9	398.80	99.7	P
Zinc				200.0	196.40	98.2	196.90	98.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	250.0	258.00	103.2	100.0	100.90	100.9	100.90	100.9	P
Cadmium	500.0	491.00	98.2	100.0	99.36	99.4	98.92	98.9	P
Zinc	500.0	494.60	98.9	200.0	194.70	97.4	194.90	97.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				100.0	105.30	105.3	102.50	102.5	P
Cadmium				100.0	101.40	101.4	99.54	99.5	P
Zinc				200.0	195.30	97.6	191.00	95.5	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead	1000.0	1017.00	101.7	400.0	402.80	100.7	420.30	105.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead				400.0	442.20	110.6	484.90	121.2	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead				400.0	496.00	124.0			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead	1000.0	1030.00	103.0	400.0	404.30	101.1	394.20	98.6	P
Zinc	500.0	510.90	102.2	200.0	202.10	101.0	193.70	96.8	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	250.0	244.80	97.9	100.0	88.42	88.4	88.98	89.0	P
Cadmium	500.0	485.80	97.2	100.0	101.50	101.5	102.80	102.8	P
Zinc	500.0	493.20	98.6	200.0	202.20	101.1	203.80	101.9	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

AA CRDL Standard Source:

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	TrueFound%R			CRDL Standard for ICP					
				Initial			Final		
				True	Found	%R	Found	%R	
Arsenic				20.0	23.82	119.1			
Cadmium				10.0	9.63	96.3			
Lead				6.0	5.13	85.5			
Zinc				40.0	40.89	102.2			

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte				CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
	True	Found	%R	True	Found	%R	Found	%R
Arsenic				20.0	20.23	101.2		
Cadmium				10.0	10.47	104.7		
Zinc				40.0	42.34	105.8		

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte				CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
				True	Found	%R	Found	%R
Lead				6.0	5.13	85.5		

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True Found %R			CRDL Standard for ICP				
				Initial			Final	
				True	Found	%R	Found	%R
Lead				6.0	7.16	119.3		
Zinc				40.0	45.17	112.9		

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

AA CRDL Standard Source: _____

ICP CRDL Standard Source: Inorganic Ventures

Concentration Units: ug/L

Analyte				CRDL Standard for ICP				
	True	Found	%R	Initial True	Initial Found	Initial %R	Final Found	Final %R
Arsenic				20.0	14.67	73.4		
Cadmium				10.0	10.94	109.4		
Zinc				40.0	41.01	102.5		

Control Limits: no limits have been established by EPA at this time

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): TCLP EXTPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Arsenic	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Cadmium	0.4	U	0.4	U	0.4	U	0.4	U	0.400	U	P
Lead	2.2	U	2.2	U	-2.5	B	2.2	U	2.200	U	P
Zinc	4.3	U	4.3	U	4.3	U	4.3	U			P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		4.0	U					0.532	B	P
Cadmium		0.4	U					0.145	B	P
Lead		2.2	U					9.697		P
Zinc		4.3	U					8.980		P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic	4.0 U	-4.7	B	4.0	U	-4.1	B			P
Cadmium	0.4 U	0.4	U	0.4	U	0.4	U			P
Zinc	4.3 U	4.3	U	4.3	U	4.3	U			P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		4.0	U							P
Cadmium		0.4	U							P
Zinc		4.3	U							P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Lead	-2.3	B		2.2	U		2.2	U		P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Lead		2.2	U	-3.7	B					P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Lead	3.2	B	2.2	U	2.2	U			0.220	U	P
Zinc	4.3	U	4.3	U	4.3	U			0.430	U	P

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Arsenic	4.0	U	4.0	U	4.0	U					P
Cadmium	1.2	B	0.5	B	0.7	B					P
Zinc	4.3	U	4.3	U	4.3	U					P

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	101	2	100.5	99.5			
Cadmium	0	982	0	941.0	95.8			
Lead	0	55	-6	47.3	86.0			
Zinc	0	987	-1	939.3	95.2			

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	101	-5	103.7	102.7			
Cadmium	0	982	3	949.9	96.7			
Zinc	0	987	1	941.6	95.4			

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Lead	0	47	-5	44.5	94.7			

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Lead	0	47	-8	46.3	98.5			
Zinc	0	923	1	917.1	99.4			

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USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 ICS Source: Inorganic VenturesConcentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	101	-4	95.5	94.6			
Cadmium	0	940	-1	885.5	94.2			
Zinc	0	923	-1	869.9	94.2			

USEPA-CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-02/SS02S

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Matrix (soil/water): SOIL Level (low/med): LOW% Solids for Sample: 91.9Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic		1038.9980		1165.2520		3.51	-3597.0		P
Cadmium		90.9123		77.2236		4.39	311.8		P
Lead		41191.3281		37999.1992		1.768	1371.0		P
Zinc		51028.4688		38161.9883		43.88	29322.0		P

Comments:

USEPA-CLP FORMS

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-02/SS02A

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic		16950.00		13600.00		4000.0	83.8		P
Cadmium		6046.00		901.30		5000.0	102.9		P
Lead		451100.00		443500.00		2000.0	380.0		P
Zinc		504000.00		445400.00		50000.0	117.2		P

Comments: _____

USEPA-CLP FORMS

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-02/SS02 TCLP A

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Matrix (soil/water): TCLP EXT Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added(SA)	%R	Q	M
Arsenic		3817.00		400.00	U	4000.0	95.4		P
Cadmium		6043.00		859.80		5000.0	103.7		P
Lead		203400.00		192500.00		2000.0	545.0		P

Comments: _____

USEPA-CLP FORMS

6

DUPLICATES

SAMPLE NO.

EC-02/SS02D

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Matrix (soil/water): SOIL Level (low/med): LOW% Solids for Sample: 91.9 % Solids for Duplicate: 91.8Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		1165.2520		897.4070		26.0	*	P
Cadmium	42.8	77.2236		64.2926		18.3		P
Lead		37999.1992		33937.6289		11.3		P
Zinc		38161.9883		33701.5195		12.4		P

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237
Solid LCS Source: ERA lot249/USEPA 0996/ERA lot0899
Aqueous LCS Source: Inorganic Ventures

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits		%R
Arsenic	1050.0	1030.00	98.1	24.0	25.5		19.2	28.8	106.2
Cadmium	525.0	491.30	93.6	25.0	26.1		20.0	30.0	104.4
Lead	1015.0	997.90	98.3	22.0	24.7		17.6	26.4	112.3
Zinc				50.0	53.3		40.0	60.0	106.6

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237Solid LCS Source: ERA lot249/USEPA 0996/ERA lot0899Aqueous LCS Source: Inorganic Ventures

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Lead				22.0	22.5		17.6 26.4	102.3	
Zinc				50.0	49.8		40.0 60.0	99.6	

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-02/SS02L

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108237Matrix (soil/water): SOIL

Level (low/med): _____

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ- ence	Q	M
Arsenic	13600.00	11850.00	12.9		P
Cadmium	901.30	859.10	4.7	B	P
Lead	443500.00	443200.00	0.1		P
Zinc	445400.00	456300.00	2.4		P

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-02/SS02 TCLP L

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237
Matrix (soil/water): TCLP EXT Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ- ence	Q	M
Arsenic	400.00 U	2000.00 U			P
Cadmium	859.80	885.70 B	3.0		P
Lead	192500.00	197100.00	2.4		P

USEPA-CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 Date: 7/1/2005

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	189.042		10	4.0	P
Cadmium	226.502		5	0.4	P
Lead	220.353		10	2.2	P
Zinc	206.200		20	4.3	P

Comments: _____

USEPA-CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Al	Ca	Fe	Mg	Ag
Aluminum	308.215	0.0000000	0.0000000	0.0002800	0.0002100	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000380	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000050	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000980	0.0000000	0.0001000	0.0000020	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000220	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000530	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	-0.0006800	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000080	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	-0.0001000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	-0.0000030	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000280	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000230	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		As	B	Be	Cd	Co
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0480000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	-0.0015000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	-0.0002400
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0000000	0.0021000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Cr	Cu	Mn	Mo	Na
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0011560	0.0000000
Antimony	206.838	-0.0008700	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	-0.0000190	0.0000000	0.0000000	0.0002340	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0009490	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0002600	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0038000	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0019000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0005280	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0002540	0.0000000	0.0014400	0.0015000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000860	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Ni	Pb	P	Sb	Se
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000870	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0001100	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0005700	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	-0.0003200	0.0000000	0.0000000	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0002200	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		Si	Sn	Sr	Ti	Tl
Aluminum	308.215	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.838	0.0000000	0.0000000	0.0000000	0.0034000	0.0000000
Arsenic	189.042	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.042	0.0000000	0.0000000	0.0000000	0.0000090	0.0000000
Boron	249.678	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0002000	0.0000000
Calcium	317.933	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001340	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0021600	0.0000000
Copper	324.754	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.441	0.0000000	0.0000000	0.0000000	0.0013800	0.0000000
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0008000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Molybdenum	202.030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Phosphorus	178.287	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.491	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.026	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0002400	0.0000000
Sodium	330.232	0.0000000	0.0000000	0.0000000	0.1776000	0.0000000
Strontium	421.552	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.864	0.0000000	0.0000000	0.0000000	0.0002500	0.0000000
Tin	189.989	0.0000000	0.0000000	0.0000000	0.0004400	0.0000000
Titanium	334.941	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	206.200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments: _____

USEPA-CLP FORMS

11A

ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237ICP ID Number: TJA ICAP 6 Date: 1/20/2005

Analyte	Wave-length (nm)	Interelement Correction Factors for:				
		V	Zn			
Aluminum	308.215	0.0265000	0.0000000			
Antimony	206.838	-0.0002800	0.0000000			
Arsenic	189.042	-0.0002800	0.0000000			
Barium	493.409	0.0000000	0.0000000			
Beryllium	313.042	0.0005800	0.0000000			
Boron	249.678	0.0000000	0.0000000			
Cadmium	226.502	0.0000000	0.0000000			
Calcium	317.933	0.0000000	0.0000000			
Chromium	267.716	-0.0001800	0.0000000			
Cobalt	228.616	0.0000000	0.0000000			
Copper	324.754	0.0000000	0.0000000			
Iron	271.441	0.0234500	0.0000000			
Lead	220.353	-0.0001140	0.0000000			
Magnesium	279.079	0.0000000	0.0000000			
Manganese	257.610	0.0000000	0.0000000			
Molybdenum	202.030	0.0000000	0.0000000			
Nickel	231.604	0.0000000	0.0000000			
Phosphorus	178.287	0.0000000	0.0146000			
Potassium	766.491	0.0000000	0.0000000			
Selenium	196.026	0.0000000	0.0000000			
Silver	328.068	-0.0001200	0.0000000			
Sodium	330.232	-0.1508200	0.0582800			
Strontium	421.552	0.0000000	0.0000000			
Thallium	190.864	0.0016200	0.0000000			
Tin	189.989	0.0000000	0.0000000			
Titanium	334.941	0.0000000	0.0000000			
Vanadium	292.402	0.0000000	0.0000000			
Zinc	206.200	-0.0001200	0.0000000			

Comments: _____

12

ICP LINEAR RANGES (QUARTERLY)

12

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237

ICP ID Number: TJA ICAP 6 Date: 7/1/2005

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	10.00	5000.0	P
Cadmium	10.00	25000.0	P
Lead	10.00	100000.0	P
Zinc	10.00	10000.0	P

Comments:

USEPA-CLP FORMS

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PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Method: P

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
BG-EC-01/SS02	7/25/2005	1.00	100.0
BM-BB-S	7/25/2005	1.15	100.0
EC-01/SS02	7/25/2005	1.16	100.0
EC-02/SS02	7/25/2005	1.27	100.0
EC-02/SS02D	7/25/2005	1.06	100.0
EC-02/SS02S	7/25/2005	1.24	100.0
LCSS0725B	7/25/2005	1.00	100.0
OX-BB-S	7/25/2005	1.11	100.0
PBS0725B	7/25/2005	1.00	100.0
TFM-BB-S-1	7/25/2005	1.13	100.0
TFM-BB-S-2	7/25/2005	1.19	100.0
TFM-BB-W-1	7/25/2005	1.11	100.0
TFM-BB-W-2	7/25/2005	1.20	100.0

USEPA-CLP FORMS

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PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237Method: P

EPA Sample No.	Preparation Date	Initial Weight (g)	Volume (mL)
BG-EC-01/SS02	8/12/2005	1.18	100.0
BM-BB-S	8/12/2005	1.15	100.0
EC-01/SS02	8/12/2005	1.12	100.0
LCSS081205B	8/12/2005	1.00	100.0
OX-BB-S	8/12/2005	1.30	100.0
PBS081205B	8/12/2005	1.00	100.0

USEPA-CLP FORMS

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PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237Method: P

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
EB-EC-01/SS02 TCLP	7/14/2005	100.00	100.0
EC-02/SS02 TCLP	7/14/2005	100.00	100.0
EC-02/SS02 TCLP S	7/14/2005	100.00	100.0
LCSW0714B	7/14/2005	100.0	100.0
TCLPBLKH2	7/14/2005	100.00	100.0
TFM-BB-S-2 TCLP	7/14/2005	100.00	100.0
TFM-BB-W-1 TCLP	7/14/2005	100.00	100.0

USEPA-CLP FORMS

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ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108237Instrument ID Number: TJA ICAP 6Method: PStart Date: 8/5/2005End Date: 8/5/2005

EPA Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N				
S0	1.00	0056				X			X					X												X					
S	1.00	0100																													
S	1.00	0104			X								X																		
S	1.00	0108						X																		X					
ICV	1.00	0113			X			X					X													X					
ICB	1.00	0117			X			X					X													X					
ICSA	1.00	0121			X			X					X													X					
ICSAB	1.00	0126			X			X					X													X					
CRI	1.00	0130			X			X					X													X					
CCV	1.00	0134			X			X					X													X					
CCB	1.00	0139			X			X					X													X					
ZZZZZZ	1.00	0143																													
LCSW0714B	1.00	0147			X			X					X																		
ZZZZZZ	1.00	0151																													
ZZZZZZ	1.00	0156																													
ZZZZZZ	1.00	0200																													
ZZZZZZ	1.00	0204																													
ZZZZZZ	1.00	0208																													
ZZZZZZ	1.00	0212																													
ZZZZZZ	1.00	0217																													
TCLPBLKH2	1.00	0221			X			X					X																		
CCV	1.00	0225			X			X					X													X					
CCB	1.00	0229			X			X					X													X					
ZZZZZZ	1.00	0234																													
PBS0725B	1.00	0238			X			X					X													X					
LCSS0725B	1.00	0242			X			X					X													X					
ZZZZZZ	1.00	0246																													
ZZZZZZ	1.00	0251																													
ZZZZZZ	1.00	0255																													
ZZZZZZ	1.00	0259																													
ZZZZZZ	1.00	0303																													
ZZZZZZ	1.00	0307																													
ZZZZZZ	1.00	0312																													
CCV	1.00	0316			X			X					X													X					
CCB	1.00	0320			X			X					X													X					
ZZZZZZ	1.00	0324																													
ZZZZZZ	1.00	0329																													
ZZZZZZ	1.00	0333																													

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 8/5/2005 End Date: 8/5/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V N	Z N	C N		
ZZZZZZ	1.00	0337																											
ZZZZZZ	1.00	0341																											
ZZZZZZ	1.00	0346																											
CCV	1.00	0350				X			X						X													X	
CCB	1.00	0354				X			X						X													X	

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108237Instrument ID Number: TJA ICAP 6Method: PStart Date: 8/16/2005End Date: 8/16/2005

EPA Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A G	N A	T L	V	Z N	C N
S0	1.00	0121				X			X																	X	
S	1.00	0125																									
S	1.00	0129				X																					
S	1.00	0133							X																	X	
ICV	1.00	0138				X			X																	X	
ICB	1.00	0142				X			X																	X	
ICSA	1.00	0146				X			X																	X	
ICSAB	1.00	0151				X			X																	X	
CRI	1.00	0155				X			X																	X	
CRLOW	1.00	0159				X			X																	X	
CCV	1.00	0204				X			X																	X	
CCB	1.00	0208				X			X																	X	
EC-02/SS02A	100.00	0212				X			X																	X	
EC-02/SS02 TCLP A	100.00	0216				X			X																		
ZZZZZZ	1.00	0221																									
ZZZZZZ	1.00	0225																									
ZZZZZZ	1.00	0229																									
ZZZZZZ	1.00	0233																									
ZZZZZZ	1.00	0238																									
ZZZZZZ	1.00	0242																									
ZZZZZZ	5.00	0246																									
ZZZZZZ	1.00	0250																									
CCV	1.00	0254				X			X																	X	
CCB	1.00	0259				X			X																	X	

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 8/5/2005 End Date: 8/5/2005

EPA Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N				
S0	1.00	1145				X			X																		X				
S	1.00	1149																													
S	1.00	1153				X																									
S	1.00	1157							X																		X				
ICV	1.00	1202				X			X																		X				
ICB	1.00	1206				X			X																		X				
ICSA	1.00	1210				X			X																		X				
ICSAB	1.00	1215				X			X																		X				
CRI	1.00	1219				X			X																		X				
CCV	1.00	1223				X			X																		X				
CCB	1.00	1227				X			X																		X				
EB-EC-01/SS02 TCLP	1.00	1232				X			X																						
OX-BB-S	1.00	1236				X			X																						
BM-BB-S	1.00	1240				X			X																						
EC-01/SS02	1.00	1244				X			X																						
BG-EC-01/SS02	1.00	1249				X			X																						
CCV	1.00	1253				X			X																		X				
CCB	1.00	1257				X			X																		X				
TFM-BB-W-1 TCLP	100.00	1302				X			X																						
TFM-BB-S-2 TCLP	100.00	1306				X			X																						
EC-02/SS02 TCLP	100.00	1310				X			X																						
EC-02/SS02 TCLP L	500.00	1314				X			X																						
EC-02/SS02 TCLP S	100.00	1318				X			X																						
TFM-BB-S-1	100.00	1323				X			X																		X				
TFM-BB-W-1	100.00	1327				X			X																		X				
TFM-BB-S-2	100.00	1331				X			X																		X				
TFM-BB-W-2	100.00	1335				X			X																		X				
EC-02/SS02	100.00	1339				X			X																		X				
CCV	1.00	1344				X			X																		X				
CCB	1.00	1348				X			X																		X				
EC-02/SS02L	500.00	1352				X			X																		X				
EC-02/SS02D	100.00	1357				X			X																		X				
EC-02/SS02S	100.00	1401				X			X																		X				
CCV	1.00	1405				X			X																		X				
CCB	1.00	1409				X			X																		X				

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108237

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 8/5/2005 End Date: 8/6/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V	Z N	C N		
S0	1.00	2252												X															
S	1.00	2256																											
S	1.00	2300												X															
S	1.00	2304																											
ICV	1.00	2308												X															
ICB	1.00	2313												X															
ICSA	1.00	2317												X															
ICSAB	1.00	2321												X															
CRI	1.00	2326												X															
CCV	1.00	2330												X															
CCB	1.00	2334												X															
ZZZZZZ	1.00	2339																											
ZZZZZZ	1.00	2343																											
ZZZZZZ	1.00	2347																											
ZZZZZZ	5.00	2351																											
ZZZZZZ	1.00	2355																											
ZZZZZZ	1.00	0000																											
ZZZZZZ	1.00	0004																											
ZZZZZZ	1.00	0008																											
ZZZZZZ	1.00	0012																											
ZZZZZZ	1.00	0016																											
CCV	1.00	0021												X															
CCB	1.00	0025												X															
ZZZZZZ	1.00	0029																											
ZZZZZZ	1.00	0034																											
ZZZZZZ	1.00	0038																											
ZZZZZZ	1.00	0042																											
ZZZZZZ	1.00	0046																											
TFM-BB-W-1 TCLP	100.00	0050												X															
TFM-BB-S-2 TCLP	100.00	0055												X															
EC-02/SS02 TCLP	100.00	0059												X															
EC-02/SS02 TCLP L	500.00	0103												X															
EC-02/SS02 TCLP A	100.00	0107												X															
CCV	1.00	0112												X															
CCB	1.00	0116												X															
EC-02/SS02 TCLP S	100.00	0120												X															
TFM-BB-S-1	100.00	0124												X															
TFM-BB-W-1	100.00	0129												X															

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 8/5/2005 End Date: 8/6/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	C N		
TFM-BB-S-2	100.00	0133												X															
TFM-BB-W-2	100.00	0137												X															
EC-02/SS02	100.00	0141												X															
EC-02/SS02L	500.00	0145												X															
EC-02/SS02A	100.00	0150												X															
EC-02/SS02D	100.00	0154												X															
EC-02/SS02S	100.00	0158												X															
CCV	1.00	0202												X															
CCB	1.00	0207												X															
EB-EC-01/SS02 TCLP	1.00	0211												X															
CCV	1.00	0215												X															
CCB	1.00	0220												X															

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108237

Instrument ID Number: TJA ICAP 6 Method: P

Start Date: 8/13/2005 End Date: 8/13/2005

EPA Sample No.	D/F	Time	% R	Analytes																					
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N
S0	1.00	1148												X											X
S	1.00	1152																							
S	1.00	1156												X											
S	1.00	1200																							X
ICV	1.00	1205												X											X
ICB	1.00	1209												X											X
ICSA	1.00	1213												X											X
ICSAB	1.00	1218												X											X
CRI	1.00	1222												X											X
CCV	1.00	1226												X											X
CCB	1.00	1231												X											X
PBS081205B	1.00	1235												X											X
LCSS081205B	1.00	1239												X											X
OX-BB-S	1.00	1243												X											X
ZZZZZZ	5.00	1247																							
BM-BB-S	1.00	1252												X											X
EC-01/SS02	1.00	1256												X											X
BG-EC-01/SS02	1.00	1300												X											X
ZZZZZZ	1.00	1304																							
ZZZZZZ	5.00	1309																							
ZZZZZZ	1.00	1313																							
CCV	1.00	1317												X											X
CCB	1.00	1321												X											X



SAMPLE HANDLING

LENEXA, KS 662141528
UNITED STATES US

Ship date: 29JUN05
Actual Wgt: 37.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

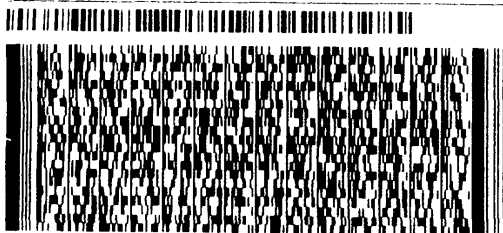
(802) 655-1203

STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

FedEx
Express



REF: green



Delivery Address
Barcode

BILL SENDER

STANDARD OVERNIGHT

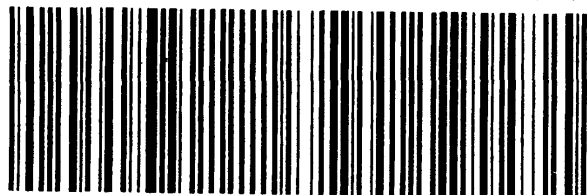
TRK# 6914 5415 3053 Form 0201

THU
Deliver By:
30JUN05

BTV

05446 -VT-US

XH BTVA

[illegible]

ORIGIN ID: ~~IXDA 19131 894-D/100~~
MATTHEW COUNCIL
STL KANSAS CITY SERVICE CENTER
8407 NIEMAN RD

LENEXA, KS 662141528
UNITED STATES US

Ship Date: 29JUN05
Actual Wgt: 34.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

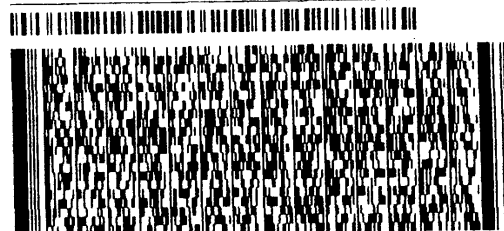
(802) 655-1203

TO [REDACTED]
STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

FedEx
Express



REF: green



Delivery Address
Barcode

BILL SENDER

STANDARD OVERNIGHT

TRK# **6914 5415 3042** Form 0201

THU
Deliver By:
30JUN05

BTV AA

05446 -VT-US

XH BTVA



156148-434 NRTT 10-04 •

4861/02

COOLER SCREEN	YES	NO	NA	COMMENTS
Cooler screened with geiger counter and radioactivity is < 0.05 mr/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
There is <u>no</u> evidence to indicate tampering	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Custody seals are present and intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Custody seal numbers are present	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
If yes, list custody seal numbers:				

Unless otherwise documented, the recorded temperature readings are adjusted readings to account for the CF of the IR Gun
EPA Criteria: 0-6°C, except for air samples which should be at ambient temperature and tissue samples which may be frozen.
Some client programs require thermal preservation criteria of 2-4°C. The PM must notify SM when alternate criteria is specified.

CHAIN OF CUSTODY (COC)	YES	NO	NA	COMMENTS
------------------------	-----	----	----	----------

SAMPLE INTEGRITY / USABILITY	YES	NO	NA	COMMENTS
------------------------------	-----	----	----	----------

The sample container matches the COC	X			
Appropriate sample containers were received for the tests requested	X			
Samples were received within holding time	X			
Sufficient amount of sample is provided for requested analyses	X			
VOA vials do not have headspace or a bubble >6mm (1/4" diameter)			X	
Appropriate preservatives were used for the tests requested			X	
pH of inorganic samples checked and is within method specification			X	
If no, attach Inorganic Sample pH Adjustment Form				

FSM002:05.16.05:0
STL Burlington

STL Burlington Colchester, Vermont

Sample Data Summary
Package

SDG: 108141



NARRATIVE

STL Burlington
208 South Park Drive, Suite 1
Colchester, VT 05446

Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

August 18, 2005

Ms. Sharon Shelton
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

Re: Laboratory Project No. 25000
Case: 25000; SDG: 108141

Dear Ms. Shelton:

Enclosed are the analytical results for samples received by STL Burlington on June 30, 2005. This report is sequentially numbered starting with page 0001 and ending with page 0095. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 06/30/05 ETR No: 108141			
627224	TFM-WBB-L-1	06/16/04	Tissue
627225	TFM-UGB-1	06/16/04	Tissue
627226	TFM-UBB-1	06/16/04	Tissue
627227	TFM-UBB-L-1	06/16/04	Tissue
627228	TFM-WBB-R-1	06/16/04	Tissue
627229	TFM-WBB-1	06/16/04	Tissue
627230	TFM-WBB-L-2	06/22/04	Tissue
627231	TFM-UGB-2	06/22/04	Tissue
627232	TFM-UBB-2	06/22/04	Tissue
627233	TFM-UBB-L-2	06/22/04	Tissue
627234	TFM-WBB-R-2	06/22/04	Tissue
627235	TFM-WBB-2	06/22/04	Tissue
627236	OX-WBB-R	06/16/04	Tissue
627237	OX-WBB	06/16/04	Tissue
627238	OX-WBB-L	06/16/04	Tissue
627239	OX-UBB	06/16/04	Tissue
627240	OX-UBB-L	06/16/04	Tissue
627241	OX-UGB	06/16/04	Tissue
627242	BM-UGB	06/16/04	Tissue
627243	BM-WBB-L	06/16/04	Tissue
627244	EB1		Water

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

Please note that the results for the samples in this delivery group are reported on a wet weight basis.

An equipment blank was generated at the time of tissue preparation/homogenization. This equipment blank was carried through the analytical process and the results reported on the same weight/weight basis as the samples. The analysis of the equipment blank yielded concentrations of Lead and Zinc that were below the reporting limit but exceeded the detection limit.

The metals analysis of the batch matrix spike associated with sample TFM-WBB-2 yielded percent recoveries for Arsenic and Zinc that were slightly below the laboratory's lower control limits. The replicate analysis associated with this sample exhibited a Relative Percent Difference (RPD) for Lead that exceeded control criteria.

The metals analysis of the serial dilution associated with sample TFM-WBB-L-1 yielded a percent difference for Zinc that exceeded control criteria.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,



Don Dawicki
Project Manager

Enclosure

0001A (last alpha)

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified in project QA plan, the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

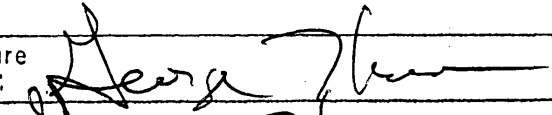
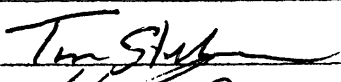


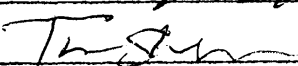
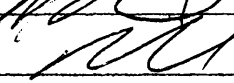
Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		GCMS Extractables		GCMS Purgeables		Metals		General Chemistry				S.E.L. Numbers	
Sample Location				Date		Time											
TFM-WBB-L-1				6-16-04		0931				✓							
TFM-UGB-1				6-16-04		0936				✓							
TFM-UBB-1				6-16-04		0941				✓							
TFM-UBB-L-1				6-16-04		0946				✓							
TFM-BB-S-1				6-16-04		0951				✓							
TFM-WBB-R-1				6-16-04		0956				✓							
TFM-WBB-1				6-16-04		1001				✓							
TFM-BB-W-1				6-16-04		1006				✓							
000																	
Sampler's Signature (Relinquished by): <i>George The</i>																	
Relinquished by: <i>George The</i>																Received by: <i>Tim St...</i>	
Relinquished by: <i>Tim St...</i>																Received by: <i>WLD</i>	
																Received by: <i>WLD</i> 6/30/05 0930	
Remarks:																	

*Indicate the number of containers for each analysis in the proper column.

SUPERFUND
DEPARTMENT OF ENVIRONMENTAL QUALITY

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
TFM-WBB-L-2		6-22-04	0932					✓					
TFM-UGB-2		6-22-04	0935					✓					
TFM-UBB-2		6-22-04	0940					✓					
TFM-UBB-L-2		6-22-04	0945					✓					
TFM-BB-S-2		6-22-04	0950					✓					
TFM-WBB-R-2		6-22-04	0955					✓					
TFM-WBB-2		6-22-04	1000					✓					
TFM-BB-W-2		6-22-04	1005					✓					
Sampler's Signature (Relinquished by): 				Received by: 									
Relinquished by: 				Received by: 									
Relinquished by: 				Received by:  6/30/05 0930									
Remarks:													

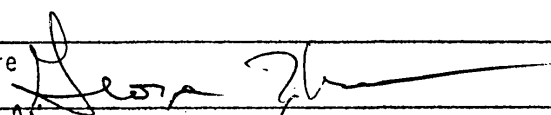



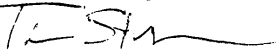

*Indicate the number of containers for each analysis in the proper column.

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry				S.E.L. Numbers
Sample Location		Date	Time										
OX-WBB-R		6-16-04	1100										
OX-WBB		6-16-04	1105										
OX-WBB-L		6-16-04	1110										
OX-UBB		6-16-04	1115										
OX-BB-S		6-16-04	1120										
OX-UBB-L		6-16-04	1125										
OX-UGB		6-16-04	1130										
Sampler's Signature (Relinquished by):				Received by:									
Relinquished by:				Received by:									
Relinquished by:				Received by:		6/30/05 0930							
Remarks:													

*Indicate the number of containers for each analysis in the proper column.

Chain of Custody Record

Site Name: TFM		Site Location: Collinsville		Code: 247		*GCMS Extractables	GCMS Purgeables	Metals	General Chemistry			S.E.L. Numbers
Sample Location		Date	Time									
BM-UGB		6-16-04	1145				✓					
BM-WBB-L		6-16-04	1150				✓					
BM-UBB-L		6-16-04	1155				✓					
BM-UBB		6-16-04	1200				✓					
BM-BB-S		6-16-04	1205				✓					
BM-WBB		6-16-04	1210				✓					
BM-WBB-R		6-16-04	1215				✓					
Sampler's Signature (Relinquished by): 				Received by: 								
Relinquished by: 				Received by: 								
Relinquished by: 				Received by:  6/30/05 0930								
Remarks:												

*Indicate the number of containers for each analysis in the proper column.



STL

CHAIN OF CUSTODY RECORD

COC # KC 605392

Page: 1 of 3

QUOTE # 3054

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
W/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / BRO2V		6/29/05	1050			1	X														
2	EC-02 / BRO2W			1100			1	X														
3	EC-02 / LV02V			1105			1	X														
4	EC-02 / LV02W			1110			1	X														
5	EC-02 / S502			1120			1	X														
6	EC-02 / S502MS			1120			1	X														
7	EC-02 / S502MSD			1120			1	X														
8	EC-02 / S502			1125			1	X														
9	EC-02 / S502MS			1125			1	X														
10	EC-02 / S502MSD			1125			1	X														

Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):	
1. Relinquished by:	Date: 6/29/05	2. Received by:	Date: 6/29/05	3. Relinquished by:	Date: 6/29/05
Company: STL	Time: 0820	Company: STL-KC	Time: 0827	Company: STL-KC	Time: 15:27
4. Received by:	Date: 6/30/05	5. Relinquished by:	Date: 6/30/05	6. Received by:	Date: 6/30/05
Company: STL B	Time: 0930	Company: STL B	Time: 0930	Company: STL B	Time: 0930

Comments:	Standard turn	Other
BLACKBERRY SAMPLING AT TULSA FUELS.		
PLEASE ATTEMPT TO RUN DUPLICATE ANALYSIS AT TJS	Rush turn	

Burlington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003499



STL

CHAIN OF CUSTODY RECORD

COC # KC 685-446

Page 1 of 3

QUOTE # 3054

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
WO:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway	Address:	SAME	E	
	Kansas City, MO 64114			F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:		I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EC-02 / RT02W		6/28/05	1130				X														
2	EC-01 / BR02V			1150				X														
3	EC-01 / LV02V			1155				X														
4	EC-1000 / LV02V			1155				X														
5	EC-01 / BR02W			1200				X														
6	EC-01 / LV02W			1205				X														
7	EC-01 / SS02			1210				X														
8	EC-01 / RT02W			1225				X														
9	BG-EC-01 / BR01W			1310				X														
10	BG-EC-01 / BR01V			1315				X														

Sampler: T. STECHER		Shipment Method: FedEx		Date Due (fax):	
1. Relinquished by:	Date:	2. Received by:	Date:	3. Relinquished by:	Date:
T. Stecher	6/29/05	[Signature]	6/29/05	[Signature]	6/29/05
Company:	Time:	Company:	Time:	Company:	Time:
	0826	STL-KC	0827	STL-KC	15:27
				STL-B	

Comments:

PLEASE ATTEMPT TO COLLECT MS/MSD FROM EC-01 / BR02W.

PLEASE ATTEMPT TO RUN DUPLICATE ANALYSIS ON BG-EC-01 / BR01V.

Standard turn

Other

Rush turn

Burlington

Severn Trent Laboratories, Inc.

208 South Park Drive, Suite 1

Colchester, VT 05446

Phone: 802.655.1203

Fax: 802.655.1248

Project Manager: Don Dawicki

TFM-0003500



STL

CHAIN OF CUSTODY RECORD

COC # KC 605892

Page: 3 of 3

QUOTE # 3054

SEVERN TRENT LABORATORIES, INC.

Customer Information		Project Information		Analysis/Methods	
PO:		Project Name:	Tulsa Fuels & Manufacturing	A	TAL Metals
W/O:		Project Number:		B	TCLP Metals
Company:	Burns & McDonnell	Bill To:	Burns & McDonnell	C	
Report to:	Sharon Shelton	Invoice ATTN:	Sharon Shelton	D	
Address:	9400 Ward Parkway Kansas City, MO 64114	Address:	SAME	E	
				F	
				G	
E-mail:	sshelton@burnsmcd.com			H	
Phone:	816.822.3168	Phone:	SAME	I	Other:
Fax:	816.822.3494	Fax:		J	

No.	Sample Description	Preservation	Date	Time	Type	Matrix	# Containers	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	BG-EC-01/LV01U		6/28/05	1320				X														
2	BG-EC-01/LV01W			1325				X														
3	BG-EC-01/SS02			1330				X														
4	BG-EC-01/SS02			1335					X													
5	BG-EC-01/RT01W			1345				X														
6																						
7																						
8																						
9																						
10																						

Sampler: T. STECHER		Shipment Method: Fed ex		Date Due (fax):	
1. Relinquished by:	Date:	2. Received by:	Date:	3. Relinquished by:	Date:
16-STL	6/29/05	[Signature]	6/29/05	[Signature]	6/29/05
Company:	Time:	Company:	Time:	Company:	Time:
	0826	STL-KC	0827	STL-KC	15:27
				STL B	0930

Comments:	Standard turn	Other
	Rush turn	



**Sample Data Summary Package
For Wet Chemistry**

0010

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-WBB-L-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627224

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 21.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		21.5	

0011

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-UGB-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627225

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 24.6

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		24.6	

0012

Sample Report Summary

Client Sample No.

TFM-UBB-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627226

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 14.9

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		14.9	

0013

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-UBB-L-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627227

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 42.9

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		42.9	

0014

Sample Report Summary

Client Sample No.

TFM-WBB-R-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627228

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 40.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		40.8	

0015

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-WBB-1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627229

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 16.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		16.3	

0016

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-WBB-L-2

% Solids: 19.1

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		19.1	

0017

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-UGB-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627231

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 24.8

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		24.8	

0018

WET CHEMISTRY

Sample Report Summary

TFM-UBB-2

Contract:

Case No.: 25000

Lab Sample ID: 627232

Client: BURMC1

Date Received: 06/30/05

% Solids: 12.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		12.0	

0019

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-UBB-L-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627233

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 41.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		41.5	

0020

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-WBB-R-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627234

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 35.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		35.5	

0021

WET CHEMISTRY

Sample Report Summary

Client Sample No.

TFM-WBB-2

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627235

Matrix: TISSUE

Client: BÚRMC1

Date Received: 06/30/05

% Solids: 11.2

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		11.2	

0022

WET CHEMISTRY

Sample Report Summary

Client Sample No.

OX-WBB-R

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627236

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 34.3

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		34.3	

0023

WET CHEMISTRY

Sample Report Summary

Client Sample No.

OX-WBB

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627237

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 8.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		8.5	

0024

WET CHEMISTRY

Sample Report Summary

Client Sample No. _____

OX-WBB-L

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627238

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 18.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		18.0	

0025

WET CHEMISTRY

Sample Report Summary

Client Sample No.

OX-UBB

% Solids: 9.4

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		9.4	

0026

Sample Report Summary

Client Sample No.

OX-UBB-L

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627240

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 37.1

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		37.1	

0027

WET CHEMISTRY

Sample Report Summary

Client Sample No.

OX-UGB

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLV

Case No.: 25000

Lab Sample ID: 627241

Matrix: TISSUE

Client: BURMC1

Date Received: 06/30/05

% Solids: 11.0

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		11.0	

0028

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-UGB

% Solids: 25.9

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		25.9	

0029

WET CHEMISTRY

Sample Report Summary

Client Sample No.

BM-WBB-L

% Solids: 19.5

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		19.5	

0030

WET CHEMISTRY

Sample Report Summary

Client Sample No.

EB1

Lab Name: STL BURLINGTON

Contract:

SDG No.: 108141

Lab Code: STLVT

Case No.: 25000

Lab Sample ID: 627244

Matrix: WATER

Client: BURMC1

Date Received: 06/30/05

% Solids: 0.2

Method	Parameter	Analytical Run Date	Analytical Batch	Units	DF	RL	Conc.	Qual.
IN623	Solids, Percent	07/26/05	N/A	%	1.0		0.2	

0031



**Sample Data Summary Package
For Metals**

0032

USEPA-CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141

SOW No.: _____

EPA Sample No.	Lab Sample ID.
BM-UGB	627242
BM-WBB-L	627243
EB1	627244
OX-UBB	627239
OX-UBB-L	627240
OX-UGB	627241
OX-WBB	627237
OX-WBB-L	627238
OX-WBB-R	627236
TFM-UBB-1	627226
TFM-UBB-2	627232
TFM-UBB-L-1	627227
TFM-UBB-L-2	627233
TFM-UGB-1	627225
TFM-UGB-2	627231
TFM-WBB-1	627229
TFM-WBB-2	627235
TFM-WBB-2D	627235DP
TFM-WBB-2S	627235MS
TFM-WBB-L-1	627224
TFM-WBB-L-2	627230
TFM-WBB-R-1	627228
TFM-WBB-R-2	627234

Were ICP interelement corrections applied? Yes/No YESWere ICP background corrections applied? Yes/No YESIf yes-were raw data generated before
application of background corrections? Yes/No NOComments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: 0033

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BM-UGB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627242
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.014	B	N	MS
7440-43-9	Cadmium	0.034	B		MS
7439-92-1	Lead	0.69		*	MS
7440-66-6	Zinc	8.9		NE	MS

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____
Comments: _____

0034

Form I - IN

TFM-0003526

-1-

EPA SAMPLE NO.

BM-WBB-L

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.012	B	N	MS
7440-43-9	Cadmium	0.027	B		MS
7439-92-1	Lead	0.28		*	MS
7440-66-6	Zinc	11.9		NE	MS

Comments: _____

0035

-1-

EPA SAMPLE NO.

EB1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.010	B	N	MS
7440-43-9	Cadmium	0.010	U		MS
7439-92-1	Lead	0.16	B	*	MS
7440-66-6	Zinc	0.11	B	NE	MS

Form I - IN

TFM-0003528

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-UBB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627239
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.014	B	N	MS
7440-43-9	Cadmium	0.0091	U		MS
7439-92-1	Lead	0.19		*	MS
7440-66-6	Zinc	2.3		NE	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0037

Form I - IN

TFM-0003529

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-UBB-L

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627240
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.051	B	N	MS
7440-43-9	Cadmium	0.013	B		MS
7439-92-1	Lead	0.45		*	MS
7440-66-6	Zinc	7.3		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0038

Form I - IN

TFM-0003530

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-UGB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627241
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.012	B	N	MS
7440-43-9	Cadmium	0.0091	U		MS
7439-92-1	Lead	0.19		*	MS
7440-66-6	Zinc	2.1		NE	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0039

Form I - IN

TFM-0003531

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-WBB

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627237
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.014	B	N	MS
7440-43-9	Cadmium	0.0083	U		MS
7439-92-1	Lead	0.22		*	MS
7440-66-6	Zinc	2.1		NE	MS

Color Before: red Clarity Before: _____ Texture: mediumColor After: yellow Clarity After: clear Artifacts: _____Comments: _____

0040

Form I - IN

TFM-0003532

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-WBB-L

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627238
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.039	B	N	MS
7440-43-9	Cadmium	0.012	B		MS
7439-92-1	Lead	0.91		*	MS
7440-66-6	Zinc	7.6		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0041

Form I - IN

TFM-0003533

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OX-WBB-R

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627236
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.15	B	N	MS
7440-43-9	Cadmium	0.070	B		MS
7439-92-1	Lead	9.3		*	MS
7440-66-6	Zinc	17.1		NE	MS

Color Before: brown Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0042

Form I - IN

TFM-0003534

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UBB-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627226
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.39		N	MS
7440-43-9	Cadmium	0.26			MS
7439-92-1	Lead	32.9		*	MS
7440-66-6	Zinc	30.9		NE	MS

Color Before: red Clarity Before: _____ Texture: mediumColor After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0043

Form I - IN

TFM-0003535

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UBB-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627232
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.36		N	MS
7440-43-9	Cadmium	0.17	B		MS
7439-92-1	Lead	16.2		*	MS
7440-66-6	Zinc	27.0		NE	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0044

Form I - IN

TFM-0003536

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UBB-L-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627227
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.37		N	MS
7440-43-9	Cadmium	0.74			MS
7439-92-1	Lead	16.2		*	MS
7440-66-6	Zinc	42.6		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0045

Form I - IN

TFM-0003537

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UBB-L-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627233
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.76		N	MS
7440-43-9	Cadmium	0.71			MS
7439-92-1	Lead	38.5		*	MS
7440-66-6	Zinc	76.1		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0046

Form I - IN

TFM-0003538

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UGB-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627225
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.048	B	N	MS
7440-43-9	Cadmium	0.43			MS
7439-92-1	Lead	1.4		*	MS
7440-66-6	Zinc	10.2		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0047

Form I - IN

TFM-0003539

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-UGB-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627231
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.057	B	N	MS
7440-43-9	Cadmium	0.40			MS
7439-92-1	Lead	2.1		*	MS
7440-66-6	Zinc	10.4		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0048

Form I - IN

TFM-0003540

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-WBB-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627229
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.048	B	N	MS
7440-43-9	Cadmium	0.21			MS
7439-92-1	Lead	3.3		*	MS
7440-66-6	Zinc	6.9		NE	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____

Comments: _____

0049

Form I - IN

TFM-0003541

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-WBB-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627235
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.099	B	N	MS
7440-43-9	Cadmium	0.10	B		MS
7439-92-1	Lead	6.7		*	MS
7440-66-6	Zinc	6.5		NE	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____
Comments: _____

0050

Form I - IN

TFM-0003542

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-WBB-L-1

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627224
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.069	B	N	MS
7440-43-9	Cadmium	0.36			MS
7439-92-1	Lead	2.7		*	MS
7440-66-6	Zinc	13.0		NE	MS

Color Before: green Clarity Before: _____ Texture: medium
Color After: yellow Clarity After: clear Artifacts: _____
Comments: _____

0051

Form I - IN

TFM-0003543

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-WBB-L-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627230
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.17		N	MS
7440-43-9	Cadmium	0.26			MS
7439-92-1	Lead	5.7		*	MS
7440-66-6	Zinc	19.1		NE	MS

Color Before: green Clarity Before: _____ Texture: mediumColor After: yellow Clarity After: clear Artifacts: _____Comments: _____

0052

Form I - IN

TFM-0003544

-1-

EPA SAMPLE NO.

TFM-WBB-R-1

Lab Name:	<u>STL BURLINGTON</u>	Contract:	<u>25000</u>	
Lab Code:	<u>STLVT</u>	Case No.:	<u>25000</u>	SAS No.: <u> </u> SDG No.: <u>108141</u>
Matrix (soil/water):	<u>TISSUE</u>	Lab Sample ID:	<u>627228</u>	
Level (low/med):	<u>LOW</u>	Date Received:	<u>6/30/2005</u>	
% Solids:	<u>100.0</u>			

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.6		N	MS
7440-43-9	Cadmium	2.2			MS
7439-92-1	Lead	237		*	MS
7440-66-6	Zinc	365		NE	MS

Color Before:	<u>brown</u>	Clarity Before:	<u></u>	Texture:	<u>medium</u>
Color After:	<u>yellow</u>	Clarity After:	<u>clear</u>	Artifacts:	<u></u>

Comments:

0053

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

TFM-WBB-R-2

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Matrix (soil/water): TISSUE Lab Sample ID: 627234
Level (low/med): LOW Date Received: 6/30/2005
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.59		N	MS
7440-43-9	Cadmium	2.5			MS
7439-92-1	Lead	142		*	MS
7440-66-6	Zinc	178		NE	MS

Color Before: brown Clarity Before: _____ Texture: mediumColor After: yellow Clarity After: clear Artifacts: _____Comments: _____

0054

Form I - IN

TFM-0003546

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	27.15	108.6	10.0	9.81	98.1	9.80	98.0	MS
Cadmium	25.0	25.91	103.6	10.0	10.01	100.1	9.77	97.7	MS
Zinc	50.0	52.69	105.4	20.0	20.47	102.4	20.25	101.2	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0055

Form II (Part 1) - IN

TFM-0003547

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				10.0	9.32	93.2	9.24	92.4	MS
Cadmium				10.0	9.20	92.0	9.21	92.1	MS
Zinc				20.0	19.01	95.0	19.10	95.5	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0056

Form II (Part 1) - IN

TFM-0003548

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141Initial Calibration Source: Inorganic Ventures/FisherContinuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead	25.0	25.32	101.3	10.0	10.04	100.4	10.19	101.9	MS
Zinc	50.0	51.49	103.0	20.0	20.51	102.6	20.60	103.0	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0057

Form II (Part 1) - IN

TFM-0003549

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141Initial Calibration Source: Inorganic Ventures/FisherContinuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead				10.0	10.30	103.0	10.42	104.2	MS
Zinc				20.0	21.08	105.4	20.92	104.6	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0058

Form II (Part 1) - IN

TFM-0003550

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead	25.0	24.91	99.6	10.0	9.87	98.7	9.99	99.9	MS
Zinc	50.0	49.86	99.7	20.0	21.25	106.2	22.12	110.6	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0059

Form II (Part 1) - IN

TFM-0003551

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141
Initial Calibration Source: Inorganic Ventures/Fisher
Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Lead				10.0	9.91	99.1			MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0060

Form II (Part 1) - IN

TFM-0003552

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic	0.1 U	0.1 U		0.1 U		0.1 U		0.010 U		MS
Cadmium	0.1 U	0.1 U		0.1 U		0.1 U		0.010 U		MS
Zinc	-1.2 B	-1.1 B		-1.1 B		-1.1 B		0.220 B		MS

0061

Form III - IN

TFM-0003553

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		0.1	U					0.010	U	MS
Cadmium		0.1	U					0.149	B	MS
Zinc		-0.9	B					0.099	B	MS

0062

Form III - IN

TFM-0003554

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Lead	0.1	U	0.1	U	0.1	U	0.1	U			MS
Zinc	0.5	B	0.6	B	0.6	B	0.6	B			MS

0063

Form III - IN

TFM-0003555

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Lead		0.1	U							MS
Zinc		0.6	B							MS

0064

Form III - IN

TFM-0003556

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	C	2	C	3	C			
Lead	0.1	U		0.1	U	0.2	B	0.1	U	
Zinc	-0.9	B		-1.0	B	-0.7	B			
								0.164	B	MS
								0.056	B	MS

0065

Form III - IN

TFM-0003557

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures
Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	20	0	20.1	100.5			
Cadmium	0	20	0	21.7	108.5			
Zinc	0	100	5	101.1	101.1			

0066

Form IV - IN

TFM-0003558

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141

ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Lead	0	20	1	22.5	112.5			
Zinc	0	100	5	96.2	96.2			

0067

Form IV - IN

TFM-0003559

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures
Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Lead	0	20	1	21.9	109.5			
Zinc	0	100	5	93.9	93.9			

0068

Form IV - IN

TFM-0003560

USEPA-CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

TFM-WBB-2S

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Matrix (soil/water): TISSUE Level (low/med): LOW% Solids for Sample: 100.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80 - 120	0.7636		0.0992	B	0.85	78.2	N	MS
Cadmium	80 - 120	0.8230		0.1037	B	0.85	84.6		MS
Lead		6.6468		6.6525		0.79	-0.7		MS
Zinc	80 - 120	12.8718		6.4651		8.55	74.9	N	MS

Comments:

0069

Form V (PART 1) - IN

TFM-0003561

USEPA-CLP FORMS

6

DUPLICATES

SAMPLE NO.

TFM-WBB-2D

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Matrix (soil/water): TISSUE Level (low/med): LOW% Solids for Sample: 100.0 % Solids for Duplicate: 100.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		0.0992	B	0.0865	B	13.7		MS
Cadmium		0.1037	B	0.1077	B	3.8		MS
Lead		6.6525		2.7548		82.9	*	MS
Zinc	1.9	6.4651		6.4963		0.5		MS

0070

Form VI - IN

TFM-0003562

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Solid LCS Source: Inorganic Ventures
Aqueous LCS Source: _____

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits		%R
Arsenic				2.5	2.17		2.0	3.0	86.8
Cadmium				2.5	2.29		2.0	3.0	91.6
Zinc				25.0	21.48		20.0	30.0	85.9

0071

Form VII - IN

TFM-0003563

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Solid LCS Source: Inorganic Ventures
Aqueous LCS Source: _____

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits		%R
Arsenic				2.5	2.19		2.0	3.0	87.6
Cadmium				2.5	2.35		2.0	3.0	94.0
Zinc				25.0	22.12		20.0	30.0	88.5

0072

Form VII - IN

TFM-0003564

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 25000
Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
Solid LCS Source: Inorganic Ventures
Aqueous LCS Source: _____

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Lead				2.5	2.68		2.0 3.0	107.2
Zinc				25.0	20.57		20.0 30.0	82.3

0073

Form VII - IN

TFM-0003565

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

TFM-WBB-L-1L

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108141Matrix (soil/water): TISSUE

Level (low/med):

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Differ- ence	Q	M
		C		C			
Arsenic	0.68	B	0.94	B	38.2		MS
Cadmium	3.55		4.29	B	20.8		MS
Lead	29.86		28.05		6.1		MS
Zinc	129.90		274.50		111.3	E	MS

0074

Form IX - IN

TFM-0003566

USEPA-CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141ICP ID Number: TJA ICPMS X5 Date: 7/5/2005

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Isotope	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	75		2	0.10	MS
Cadmium	111		2	0.10	MS
Lead	208		2	0.10	MS
Zinc	66		20	0.40	MS

Comments: _____

0075

Form X - IN

TFM-0003567

USEPA-CLP FORMS

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141ICP ID Number: TJA ICPMS X5 Date: 7/5/2005

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	15.000	50.0	MS
Cadmium	15.000	200.0	MS
Lead	15.000	2000.0	MS
Zinc	15.000	500.0	MS

Comments: _____

0076

Form XII - IN

TFM-0003568

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Method: MS

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
EB1	7/25/2005	1.00	100.0
LCSS0725C	7/25/2005	1.00	100.0
PBS0725C	7/25/2005	1.00	100.0

0077

Form XIII - IN

TFM-0003569

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108141Method: MS

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
BM-UGB	7/26/2005	1.08	100.0
BM-WBB-L	7/26/2005	1.19	100.0
LCSS0726A	7/26/2005	1.00	100.0
OX-UBB	7/26/2005	1.10	100.0
OX-UBB-L	7/26/2005	1.00	100.0
OX-UGB	7/26/2005	1.10	100.0
OX-WBB	7/26/2005	1.21	100.0
OX-WBB-L	7/26/2005	1.01	100.0
OX-WBB-R	7/26/2005	1.15	100.0
PBS0726A	7/26/2005	1.00	100.0
TFM-UBB-1	7/26/2005	1.09	100.0
TFM-UBB-2	7/26/2005	1.05	100.0
TFM-UBB-L-1	7/26/2005	1.05	100.0
TFM-UBB-L-2	7/26/2005	1.03	100.0
TFM-UGB-1	7/26/2005	1.21	100.0
TFM-UGB-2	7/26/2005	1.09	100.0
TFM-WBB-1	7/26/2005	1.04	100.0
TFM-WBB-2	7/26/2005	1.06	100.0
TFM-WBB-2D	7/26/2005	1.08	100.0
TFM-WBB-2S	7/26/2005	1.17	100.0
TFM-WBB-L-1	7/26/2005	1.00	100.0
TFM-WBB-L-2	7/26/2005	1.26	100.0
TFM-WBB-R-1	7/26/2005	1.03	100.0
TFM-WBB-R-2	7/26/2005	1.13	100.0

0078

Form XIII - IN

TFM-0003570

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 25000Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141Method: MS

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
BM-UGB	8/12/2005	1.13	100.0
BM-WBB-L	8/12/2005	1.30	100.0
EB1	8/12/2005	1.00	100.0
LCSS081205A	8/12/2005	1.00	100.0
OX-UBB	8/12/2005	1.13	100.0
OX-UBB-L	8/12/2005	1.01	100.0
OX-UGB	8/12/2005	1.29	100.0
OX-WBB	8/12/2005	1.17	100.0
OX-WBB-L	8/12/2005	1.29	100.0
OX-WBB-R	8/12/2005	1.09	100.0
PBS081205A	8/12/2005	1.00	100.0
TFM-UBB-1	8/12/2005	1.00	100.0
TFM-UBB-2	8/12/2005	1.25	100.0
TFM-UBB-L-1	8/12/2005	1.00	100.0
TFM-UBB-L-2	8/12/2005	1.09	100.0
TFM-UGB-1	8/12/2005	1.08	100.0
TFM-UGB-2	8/12/2005	1.26	100.0
TFM-WBB-1	8/12/2005	1.00	100.0
TFM-WBB-2	8/12/2005	1.18	100.0
TFM-WBB-2D	8/12/2005	1.15	100.0
TFM-WBB-2S	8/12/2005	1.26	100.0
TFM-WBB-L-1	8/12/2005	1.12	100.0
TFM-WBB-L-2	8/12/2005	1.24	100.0
TFM-WBB-R-1	8/12/2005	1.09	100.0
TFM-WBB-R-2	8/12/2005	1.17	100.0

0079

Form XIII - IN

TFM-0003571

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108141Instrument ID Number: TJA ICPMS X5Method: MSStart Date: 8/5/2005End Date: 8/5/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K S	S E	A G	N A	T L	V	Z N	C N		
STD0	1.00	1152				X			X																X				
STD1	1.00	1158				X			X																X				
STD2	1.00	1203				X			X																X				
STD3	1.00	1208				X			X																X				
ICV	1.00	1214				X			X																X				
ICB	1.00	1219				X			X																X				
ICSA	1.00	1224				X			X																X				
ICSAB	1.00	1229				X			X																X				
CCV	1.00	1235				X			X																X				
CCB	1.00	1240				X			X																X				
PBS0725C	1.00	1245				X			X																X				
LCSS0725C	1.00	1250				X			X																X				
EB1	1.00	1256				X			X																X				
ZZZZZZ	5.00	1301																											
PBS0726A	1.00	1306				X			X																X				
LCSS0726A	1.00	1311				X			X																X				
TFM-WBB-L-1	1.00	1317				X			X																X				
TFM-WBB-L-1L	5.00	1322				X			X																X				
TFM-UGB-1	1.00	1327				X			X																X				
TFM-UBB-1	1.00	1332				X			X																X				
CCV	1.00	1338				X			X																X				
CCB	1.00	1343				X			X																X				
TFM-UBB-L-1	1.00	1348				X			X																X				
TFM-WBB-R-1	1.00	1353				X			X																				
TFM-WBB-1	1.00	1359				X			X																X				
TFM-WBB-L-2	1.00	1404				X			X																X				
TFM-UGB-2	1.00	1409				X			X																X				
TFM-UBB-2	1.00	1414				X			X																X				
TFM-UBB-L-2	1.00	1420				X			X																				
TFM-WBB-R-2	1.00	1425				X			X																				
TFM-WBB-2	1.00	1430				X			X																X				
TFM-WBB-2D	1.00	1435				X			X																X				
CCV	1.00	1441				X			X																X				
CCB	1.00	1446				X			X																X				
TFM-WBB-2S	1.00	1451				X			X																X				
OX-WBB-R	1.00	1456				X			X																X				
OX-WBB	1.00	1502				X			X																X				
OX-WBB-L	1.00	1507				X			X																X				

0080

Form XIV - IN

TFM-0003572

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000
 Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141
 Instrument ID Number: TJA ICPMS X5 Method: MS
 Start Date: 8/5/2005 End Date: 8/5/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N	C N			
OX-UBB	1.00	1512				X			X																X				
OX-UBB-L	1.00	1517				X			X																X				
OX-UGB	1.00	1523				X			X																X				
BM-UGB	1.00	1528				X			X																X				
BM-WBB-L	1.00	1533				X			X																X				
CCV	1.00	1538				X			X																X				
CCB	1.00	1544				X			X																X				

0081

Form XIV - IN

TFM-0003573

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: SDG No.: 108141

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 8/16/2005 End Date: 8/16/2005

EPA Sample No.	D/F	Time	% R	Analytes																					
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N
STD0	1.00	1436												X											X
STD1	1.00	1442												X											X
STD2	1.00	1447												X											X
STD3	1.00	1453												X											X
ICV	1.00	1458												X											X
ICB	1.00	1504												X											X
ICSA	1.00	1509												X											X
ICSAB	1.00	1515												X											X
CCV	1.00	1521												X											X
CCB	1.00	1526												X											X
ZZZZZZ	1.00	1532																							
ZZZZZZ	1.00	1537																							
ZZZZZZ	1.00	1542																							
ZZZZZZ	5.00	1548																							
ZZZZZZ	1.00	1553																							
ZZZZZZ	1.00	1559																							
ZZZZZZ	1.00	1604																							
ZZZZZZ	1.00	1610																							
ZZZZZZ	1.00	1615																							
ZZZZZZ	1.00	1621																							
CCV	1.00	1626												X											X
CCB	1.00	1632												X											X
ZZZZZZ	1.00	1637																							
ZZZZZZ	1.00	1643																							
ZZZZZZ	1.00	1648																							
TFM-WBB-R-2	1.00	1654												X											
TFM-WBB-2	1.00	1659												X											
TFM-WBB-2D	1.00	1705												X											
TFM-WBB-2S	1.00	1710												X											
OX-WBB-R	1.00	1716												X											
OX-WBB	1.00	1721												X											
OX-WBB-L	1.00	1727												X											
CCV	1.00	1732												X											X
CCB	1.00	1738												X											X
OX-UBB	1.00	1743												X											
OX-UBB-L	1.00	1749												X											
OX-UGB	1.00	1754												X											
BM-UGB	1.00	1800												X											

0082

Form XIV - IN

TFM-0003574

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTON Contract: 25000

Lab Code: STLVT Case No.: 25000 SAS No.: _____ SDG No.: 108141

Instrument ID Number: TJA ICPMS X5 Method: MS

Start Date: 8/16/2005 End Date: 8/16/2005

EPA Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A A	N L	T V	Z N	C N	
BM-WBB-L	1.00	1805											X														
EB1	1.00	1811											X														
TFM-WBB-R-1	10.00	1816											X											X			
TFM-UBB-L-2	10.00	1822																						X			
TFM-WBB-R-2	10.00	1827																						X			
ZZZZZZ	1.00	1833																									
CCV	1.00	1838											X											X			
CCB	1.00	1844											X											X			

0083
Form XIV - IN

TFM-0003575

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 25000Lab Code: STLVTCase No.: 25000

SAS No.: _____

SDG No.: 108141Instrument ID Number: TJA ICPMS X5Method: MSStart Date: 8/16/2005End Date: 8/17/2005

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S E	A G	N A	T L	V L	Z N	C N		
STD0	1.00	2349												X												X			
STD1	1.00	2354												X												X			
STD2	1.00	0000												X												X			
STD3	1.00	0005												X												X			
ICV	1.00	0010												X												X			
ICB	1.00	0015												X												X			
ICSA	1.00	0021												X												X			
ICSAB	1.00	0026												X												X			
CCV	1.00	0031												X												X			
CCB	1.00	0037												X												X			
PBS081205A	1.00	0042												X												X			
LCSS081205A	1.00	0047												X												X			
TFM-WBB-L-1	1.00	0052												X															
TFM-WBB-L-1L	5.00	0057												X															
TFM-UGB-1	1.00	0103												X															
TFM-UBB-1	1.00	0108												X															
TFM-UBB-L-1	1.00	0113												X															
ZZZZZZ	1.00	0118																											
TFM-WBB-1	1.00	0124												X															
TFM-WBB-L-2	1.00	0129												X															
CCV	1.00	0134												X												X			
CCB	1.00	0139												X												X			
TFM-UGB-2	1.00	0145												X															
TFM-UBB-2	1.00	0150												X															
TFM-UBB-L-2	1.00	0155												X															
ZZZZZZ	1.00	0200																											
ZZZZZZ	1.00	0206																											
ZZZZZZ	1.00	0211																											
ZZZZZZ	5.00	0216																											
ZZZZZZ	1.00	0221																											
ZZZZZZ	1.00	0227																											
ZZZZZZ	1.00	0232																											
CCV	1.00	0237												X															
CCB	1.00	0242												X															

0084

Form XIV - IN

TFM-0003576



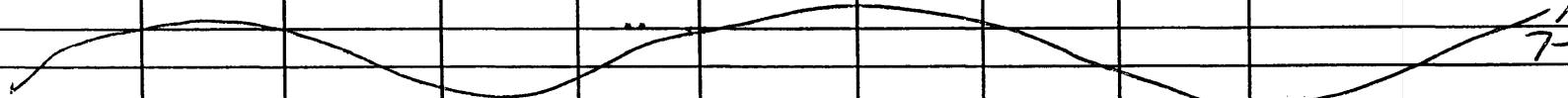
INORGANIC
SAMPLE PREPARATION

0085

BURL 108227/108141

METALS DIGESTION LOG

Specify	ILM04.1	ILM05.2	ILM05.3	200.7 DW	200.7	200.8 DW	200.8	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	<u>3050-MS</u>	TTMS	CEC	SAR	Other:	
Prep Date:	<u>7-25-05</u>	Matrix	<u>S</u>	LCS Lot #	<u>M1-07110501</u>	HCl Tag ID		<u>/</u>	
Start Time:	<u>1000</u>	Analyst	<u>FND</u>	MS Lot #	<u>M1-07016501</u>	HNO3 Tag ID		<u>M1-02-042-12</u>	
Stop Time:	<u>1410</u>	Spike Analyst	<u>FND</u>	Spike Added	<u>.5</u> mL	Spike Witness		<u>SMC</u>	

Lab ID	Digestion ¹ Amount	Final Volume	Before Digestion				After Digestion		Comments
			Color	Clarity	Texture	Artifacts	Color	Clarity	
PBS0725C	1.00	100L							
LCSS0715C	1.00								
627784	1.04		Green		Medium		Yellow	clear	
627785	1.17		Red						
627786	1.19		L						
627787	1.09		Brown						
627788	1.12		Red						
627789	1.13		L						
627790	1.01		Green						
627791	1.11		L						
627792	1.15		Brown						
627793	1.22		Red						
627794	1.01		Green						
627795	1.02		L						
627796	1.10		Red						
627796PP	1.08		L						
627796MS	1.09		L						
627797	1.15		Brown						
627244	1.00		Colorless	clear			colorless		
									

¹Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Block Digester 1 1 °C Block Digester 4 1 °C
 Block Digester 2 1 °C Block Digester 5 1 °C
 Block Digester 3 92 °C

1:1 HCl Lot # / 30% H₂O₂ Lot # /
 1:1 HNO₃ Lot # MPO6290501 2% HNO₃ Lot # /

B10A12

BORMCI 108141

METALS DIGESTION LOG

Specify	ILM04.1	ILM05.2	ILM05.3	200.7_DW	200.7	200.8_DW	200.8	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	3050-MS	TTMS	CEC	SAR	Other:	
Prep Date:	7-26-05	Matrix	S	LCS Lot #	M1-07110501	HCl Tag ID			
Start Time:	0620	Analyst	FNB	MS Lot #	M1-0710503	HNO3 Tag ID	M1-07-042-12		
Stop Time:	1010	Spike Analyst	FNB	Spike Added	.5 mL	Spike Witness			

Lab ID	Digestion ¹ Amount	Final Volume	Before Digestion				After Digestion		Comments
			Color	Clarity	Texture	Artifacts	Color	Clarity	
PCS0726A	1.00	1.00 mL							
LCS0726A	1.00								
627224	1.00		Green		medium		Yellow	clear	
627225	1.21		L						
627226	1.09		Red						
627227	1.05		Green						
627228	1.03		Brown						
627229	1.04		Red						
627230	1.25		Green						
627231	1.09		L						
627232	1.05		Red						
627233	1.03		Green						
627234	1.13		Brown						
627235	1.06		Red						
627235DP	1.08		Red						
627235MS	1.17		Red						
627236	1.15		Brown						
627237	1.21		Red						
627238	1.01		Green						
627239	1.10		Red						
627240	1.00		Green						
627241	1.10		Red						

¹Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Block Digester 1 °C Block Digester 4 °C
 Block Digester 2 °C Block Digester 5 74 °C
 Block Digester 3 °C

1:1 HCl Lot # 30% H₂O₂ Lot #
 1:1 HNO₃ Lot # MP06290501 2% HNO₃ Lot #

B10A12

$\frac{1}{2}$

Specify	ILM04.1	ILM05.2	ILM05.3	200.7_DW	200.7	200.8_DW	200.8	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	3050-MS	TTMS	CEC	SAR	Other:	
Prep Date:	Matrix			LCS Lot #				HCl Tag ID	
Start Time:	Analyst			MS Lot #				HNO3 Tag ID	
Stop Time:	Spike Analyst			Spike Added		mL		Spike Witness	

Lab ID	Digestion Amount	Final Volume	Before Digestion				After Digestion		Comments
			Color	Clarity	Texture	Artifacts	Color	Clarity	
627242	1.08	100.2	Brown		Medium		Yellow	Clear	
627243	1.19	1	Green		1		1	1	
<div style="position: absolute; top: 0; left: 0; width: 100%; height: 100%; border: 1px solid black; transform: rotate(45deg);"></div>									

Block Digester 1 _____° C Block Digester 4 _____° C
Block Digester 2 _____° C Block Digester 5 _____° C
Block Digester 3 _____° C

1:1 HCl Lot # _____ 30% H₂O₂ Lot # _____
1:1 HNO₃ Lot # _____ 2% HNO₃ Lot # _____

FME002:04.08.05:2
STL Burlington

BURN 1 108141

METALS DIGESTION LOG

Specify	ILM04.1	ILM05.2	ILM05.3	200.7_DW	200.7	200.8_DW	3005-AES	3005-MS
Digestion Method:	3010-AES	3010-MS	3050-AES	3050-MS	TTMS	CEC	SAR	Other:
Prep Date: 8-12-05	Matrix S			LCS Lot # M1-07110501			HCl Tag ID /	
Start Time: 0700	Analyst FND			MS Lot # M1-07010503			HNO3 Tag ID M1-02-042-12	
Stop Time: 1115	Spike Analyst FND			Spike Added .5 mL			Spike Witness	

Lab ID 8-12-05	Digestion ¹ Amount	Final Volume	Before Digestion				After Digestion		Comments
			Color	Clarity	Texture	Artifacts	Color	Clarity	
PBS 0801205A	1.00	1.00							
LCS 0801205A	1.00								
627224	1.12		Green		Medium		Yellow	Clear	
627225	1.08		L						
627226	1.00		Red						
627227	1.00		Green						
627228	1.09		Brown						
627229	1.00		Red						
627230	1.24		Green						
627231	1.26		L						
627232	1.25		Red						
627233	1.09		Green						
627234	1.17		Brown						
627235	1.18		Red						
627235DP	1.15		L						
627235MS	1.26								
627236	1.09		Brown						
627237	1.17		Red						
627238	1.29		Green						
627239	1.13		Red						
627240	1.01		Green						
627241	1.29		Red						

¹Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Block Digester 1

/ °C

Block Digester 4 / °C

1:1 HCl Lot #

30% H₂O₂ Lot #

Block Digester 2

93 °C

Block Digester 5 / °C

1:1 HNO₃ Lot # MPO80805012% HNO₃ Lot #

Block Digester 3

92 °C

FME002:07.26.05:3

STL Burlington

$\frac{2}{2}$ [illegible]

FD
8-12-05

Block Digester 1 1 °C Block Digester 4 1 °C 1:1 HCl Lot # _____ 30% H₂O₂ Lot # _____
Block Digester 2 1 °C Block Digester 5 1 °C 1:1 HNO₃ Lot # _____ 2% HNO₃ Lot # _____
Block Digester 3 92 °C

Page 51 of 100

TFM-0003582

STL BURLINGTON

HOMOG_PREP

CLIENT:

CASE:

SDG:

ETR:

DATE:

Burmc
25000
108141
108141
7/5/05

ANALYST: JFF

STL ID	CLIENT ID	Add Biota to the tared labeled bottle.	Record # of specimens	Record pre-homogenization weight (grams).	Section sample 1-3" if necessary	Use knife/homogenizer, etc. to homogenize	Homogenize 2.0 min or until slurry.	Scrape excess biota from homogenizer into sample jar.	Weigh jar and record post-homogenization weight (grams)	Record method of homogenization for each sample (ie homogenizer, knives, etc.)
627244	EBLK	JFF	X	45.02	JFF	JFF	JFF	JFF	45.72	Homogenizer/Knife
627224	TFM-WBB-L-1		X	77.17					70.89	Knife
627225	TFM-UGB-1		X	45.93					42.07	Knife
627226	TFM-UGB-1		X	53.48					52.39	Homogenizer
627227	TFM-UGB-L-1		X	37.04					35.71	Knife
627228	TFM-WBB-R-1		X	47.78					42.06	Knife
627229	TFM-WBB-1		X	39.65					34.27	Homogenizer
627230	TFM-WBB-L-2		X	38.15					35.06	Knife
627231	TFM-UGB-2		X	49.77					46.67	Knife
627232	TFM-UGB-2		X	42.04					60.86	Homogenizer
627233	TFM-UGB-L-2		X	11.28					10.88	Knife
627234	TFM-WBB-R-2		X	43.20					38.41	Knife
627235	TFM-WBB-2		X	66.91					64.96	Homogenizer
627236	OX-WBB-R		X	41.95					37.46	Knife
627237	OX-WAB		X	73.29					70.73	Homogenizer
627238	OX-WBB-L		X	61.61					56.63	Knife
627239	OX-UGB		X	45.81					44.83	Homogenizer
627240	OX-UGB-L		X	22.69					21.43	Knife
627241	OX-UGB		X	30.77					49.85	Homogenizer
627242	BM-UGB		X	46.21					43.05	Knife
627243	BM-WBB-L		X	76.57					66.39	Knife
		JFF		7/6/05						

JFF 7/6/05



SAMPLE HANDLING

ORIGIN ID: IXDA (913) 894-8/00
MATTHEW COUNCIL
STL KANSAS CITY SERVICE CENTER
8407 NIEMAN RD

LENEXA, KS 662141528
UNITED STATES US

Ship Date: 29JUN05
Actual Wgt: 37.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

(802) 655-1203

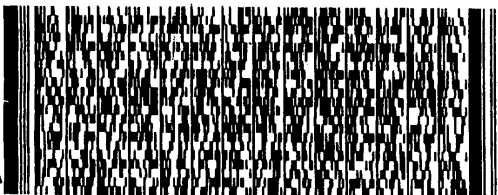
STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

FedEx
Express



REF: green

DELIVER TO ADDRESSEE ONLY - NO DELIVERY TO PO BOXES OR TO ADDRESSES WITH NO FIRST NAME



Delivery Address
Barcode

BILL SENDER

STANDARD OVERNIGHT

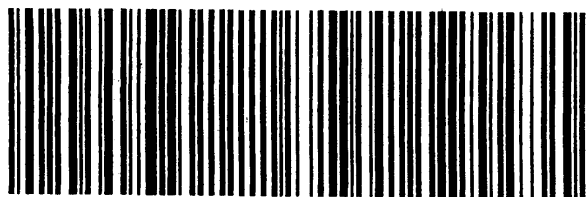
TRK# 6914 5415 3053 Form 0201

THU
Deliver By:
30JUN05

BTV AA

05446 -VT-US

XH BTVA



Part # 156146-434 NRIT 10-04

ORIGIN ID: IXDA (913) 894-8/00
MATTHEW COUNCIL
STL KANSAS CITY SERVICE CENTER
8407 NIEMAN RD

LENEXA, KS 662141528
UNITED STATES US

Ship Date: 29JUN05
Actual Wgt: 34.0 LB MAN
System#: 390151/CAFE2246
Account: S 290504368
Dimmed: 23x13x16 IN

(802) 655-1203

TO COLCHESTER, VT

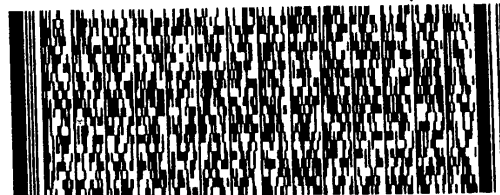
STL BURLINGTON
208 SOUTH PARK DR
SUITE 1
COLCHESTER, VT 05446

FedEx
Express



REF: green

DELIVER TO ADDRESSEE ONLY - NO DELIVERY TO PO BOXES OR TO ADDRESSES WITH NO FIRST NAME



Delivery Address
Barcode

BILL SENDER

STANDARD OVERNIGHT

TRK# 6914 5415 3042 Form 0201

THU
Deliver By:
30JUN05

BTV AA

05446 -VT-US

XH BTVA



Part # 156146-434 NRIT 10-04

[illegible]

0094

TFM-0003586

Dawicki, Don

From: Sharon Shelton [sshelton@burnsmcd.com]
Sent: Thursday, June 30, 2005 10:36 AM
To: Dawicki, Don
Subject: Tulsa Fuel & Manufacturing

Hi Don -

Here's a summary of what we discussed this morning regarding the Tulsa Fuel & Manufacturing vegetation samples that you should receive today. .

Total Metals (As, Cd, Pb, & Zn) = EPA 6020 = Vegetation Samples (Berries, Leaves, Roots)
Total Metals (As, Cd, Pb, & Zn) = EPA 6010 = Soil Samples

Please add pH analysis for the following Samples

STL COCs

EC-02/SS02 (Please also use for lab QA/QC)

EC-01/SS02

BG-EC-01/SS02

Dept of Environmental Quality COCs

TFM-BB-S-1

TFM-BB-W-1

TFM-BB-S-2

TFM-BB-W-2

BM-BB-S

OX-BB-S

If there is sufficient volume, please add TCLP Analysis for As, Cd, & Pb for
Dept of Environmental Quality COCs

TFM-BB-W-1

TFM-BB-S-2

We were having trouble getting sufficient samples at one of our sampling locations planned for QA/QC. If there is sufficient volume, please perform a total metals MS/MSD using:
EC-01/BR02W

Also, if possible, please split the sample and analyze as a duplicate:
BG-EC-01/BR01U

Please let me know if there are any questions.

Thanks,
Sharon

Sharon Shelton
Environmental Chemist
Burns & McDonnell
phone (816) 822-3168
fax (816) 822-3494
sshelton@burnsmcd.com

STL Burlington Colchester, Vermont

Sample Data Summary Package

SDG: 115168

Job: Tulsa Fuels

Case Narrative	1
Chain of Custody	3
Sample Data Summary Package - Metals	5
Sample Preparation - Metals	34
Sample Handling	38
Last Page of this Document.....	41



Case Narrative

July 27, 2006

Ms. Sharon Shelton
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

STL Burlington

208 South Park Drive, Suite 1
Colchester, VT 05446

Tel: 802 655 1203 Fax: 802 655 1248
www.stl-inc.com

Re: Laboratory Project No. 26000
Case: 26000; SDG: 115168

Dear Ms. Shelton:

Enclosed are the analytical results for the samples that were received by STL Burlington on July 7th, 2006. Laboratory identification numbers were assigned, and designated as follows:

<u>Lab ID</u>	<u>Client Sample ID</u>	<u>Sample Date</u>	<u>Sample Matrix</u>
Received: 07/07/06 ETR No: 115168			
674795	EC-02 BRO3W	07/06/06	Tissue
674796	EC-02 BRO3U	07/06/06	Tissue
674797	EC-02 RINSATE 03	07/06/06	Water
674798	EC-01 BRO3W	07/06/06	Tissue
674799	EC-01 BRO3U	07/06/06	Tissue
674799DP	EC-01 BRO3UREP	07/06/06	Tissue
674799MD	EC-01 BRO3UMSD	07/06/06	Tissue
674801	EC-01 RINSATE 03	07/06/06	Water
674802	Field Blank D1	07/06/06	Water
674803	EB01		Tissue

Documentation of the condition of the samples at the time of their receipt and any exception to the laboratory's Sample Acceptance Policy is documented in the Sample Handling section of this submittal.

A matrix spike performed during the metals analysis of sample EC-01- BRO3U yielded slightly low recovery of zinc. A post digestion spike performed on this sample also yielded slightly elevated recovery of zinc.

The laboratory created an equipment blank in association with the homogenizations of the tissue samples in this delivery group. A volume of water similar to the mass of the samples was subjected to the homogenization equipment, and has been analyzed and reported as sample EB01. Although this was actually a liquid sample, it is identified as a Tissue in the laboratories LIMS system to facilitate reporting in solid units to provide correlation to the tissue samples.

The analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAC standard. Release of the data in this test report and any associated electronic deliverables is authorized by the Laboratory Director's designee as verified by the following signature.

If there are any questions regarding this submittal, please contact me at 802 655-1203.

Sincerely,

Don Dawicki
Don Dawicki
Project Manager

Enclosure

STL Burlington Data Qualifier Definitions

Organic

- U: Compound analyzed but not detected at a concentration above the reporting limit.
- J: Estimated value.
- N: Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds (TICs) where the identification of a compound is based on a mass spectral library search.
- P: SW-846: Greater than 40% difference for detected concentrations between two GC columns. Unless otherwise specified the higher of the two values is reported on the Form I.
- CLP SOW: Greater than 25% difference for detected concentrations between two GC columns. Unless otherwise specified the lower of the two values is reported on the Form I.
- C: Pesticide result whose identification has been confirmed by GC/MS.
- B: Analyte is found in the sample and the associated method blank. The flag is used for tentatively identified compounds as well as positively identified compounds.
- E: Compounds whose concentrations exceed the upper limit of the calibration range of the instrument for that specific analysis.
- D: Concentrations identified from analysis of the sample at a secondary dilution.
- A: Tentatively identified compound is a suspected aldol condensation product.
- X,Y,Z: Laboratory defined flags that may be used alone or combined, as needed. If used, the description of the flag is defined in the project narrative.

Inorganic/Metals

- E: Reported value is estimated due to the presence of interference.
- N: Matrix spike sample recovery is not within control limits.
- * Duplicate sample analysis is not within control limits.
- B: The result reported is less than the reporting limit but greater than the instrument detection limit.
- U: Analyte was analyzed for but not detected above the reporting limit.

Method Codes:

- P ICP-AES
MS ICP-MS
CV Cold Vapor AA
AS Semi-Automated Spectrophotometric

5/24/2006 04:24:08 PM



Chain of Custody



021706 Form WCD-KC1

Request for Chemical Analysis and Chain of Custody Record

Burns & McDonnell Engineering
9400 Ward Parkway
Kansas City, Missouri 64114
Phone: (816) 333-9400 Fax: (816) 822-3494

Attention: **SHARON SHELTON**

Laboratory: **STL BURLINGTON**

Address: **208 SOUTH PARK DRIVE, SUITE 1**

City/State/Zip: **COLCHESTER, VT 05446**

Telephone:

Document Control No:

Lab. Reference No. or Episode No.:

Project Number: **36478 TULSA FUELS**

Sample Type

Client Name:

Matrix

Sample Number			Sample Event		Sample Depth (in feet)		Sample Collected		Matrix			Number of Containers	Analysis	Remarks
Group or SWMU Name	Sample Point	Sample Designator	Round	Year	From	To	Date	Time	Liquid	Solid	Gas			
TFM ↓	EC-02	BR03W					7/6/06	1100		X		1	X	
	EC-02	BR03U						1100		X		1	X	
	EC-02	RINSATE03						1105	X			1	X	
	EC-01	BR03W						1140		X		1	X	
	EC-01	BR03U						1140		X		1	X	
	EC-01	BR03UMS/MSD						1140		X		1	X	
	EC-01	RINSATE03						1145	X			1	X	
	FIELD BLANK DI							1300	X			1	X	

Sampler (signature):

TIM STECHER

Sampler (signature):

Special Instructions:

Relinquished By (signature):

1. **Tim Stecher**

Date/Time

7/6/06 1700

Received By (signature):

Melvin B...

Date/Time

7-7-06 1000

Ice Present in Container:

Yes ☐

No ☐

Temperature Upon Receipt:

Relinquished By (signature):

2.

Date/Time

Received By (signature):

Date/Time

Laboratory Comments:



Sample Data Summary Package - Metals

USEPA-CLP FORMS

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168

SOW No.: _____

EPA Sample No.	Lab Sample ID.
EB01	674803
EC-01 BRO3U	674799
EC-01 BRO3UD	674799DP
EC-01 BRO3US	674799MS
EC-01 BRO3W	674798
EC-01 RINSATE 03	674801
EC-01 RINSATE 03D	674801DP
EC-01 RINSATE 03S	674801MS
EC-02 BRO3U	674796
EC-02 BRO3W	674795
EC-02 RINSATE 03	674797
Field Blank D1	674802

Were ICP interelement corrections applied? Yes/No YESWere ICP background corrections applied? Yes/No YESIf yes-were raw data generated before application of background corrections? Yes/No NOComments: _____

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: _____

Date: _____ Title: _____

COVER PAGE - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EB01

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): TISSUE Lab Sample ID: 674803
Level (low/med): LOW Date Received: 07/07/06
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.010	U		MS
7440-43-9	Cadmium	0.030	B		MS
7439-92-1	Lead	0.010	U		MS
7440-66-6	Zinc	0.43	B	N	MS

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: Results reported in mg/Kg as received

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01 BRO3U

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): TISSUE Lab Sample ID: 674799
Level (low/med): LOW Date Received: 07/07/06
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0074	U		MS
7440-43-9	Cadmium	0.11	B		MS
7439-92-1	Lead	0.0091	B		MS
7440-66-6	Zinc	4.0	N		MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: pale yellow Clarity After: clear Artifacts: _____
Comments: Results reported in mg/Kg as received

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01 BRO3W

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): TISSUE Lab Sample ID: 674798
Level (low/med): LOW Date Received: 07/07/06
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.0074	U		MS
7440-43-9	Cadmium	0.10	B		MS
7439-92-1	Lead	0.070	B		MS
7440-66-6	Zinc	3.9	N		MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: pale yellow Clarity After: clear Artifacts: _____
Comments: Results reported in mg/Kg as received

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-01 RINSATE 03

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): WATER Lab Sample ID: 674801
Level (low/med): LOW Date Received: 07/07/06
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.11	B		MS
7440-43-9	Cadmium	0.42	B		MS
7439-92-1	Lead	4.4			MS
7440-66-6	Zinc	53.5			MS

Color Before: pink Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____

Comments: _____

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02 BRO3U

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): TISSUE Lab Sample ID: 674796
Level (low/med): LOW Date Received: 07/07/06
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.024	B		MS
7440-43-9	Cadmium	0.14	B		MS
7439-92-1	Lead	0.88			MS
7440-66-6	Zinc	4.7		N	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: pale yellow Clarity After: clear Artifacts: _____
Comments: Results reported in mg/Kg as received

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02 BRO3W

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): TISSUE Lab Sample ID: 674795
Level (low/med): LOW Date Received: 07/07/06
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.11	B		MS
7440-43-9	Cadmium	0.093	B		MS
7439-92-1	Lead	2.5			MS
7440-66-6	Zinc	4.9		N	MS

Color Before: red Clarity Before: _____ Texture: medium
Color After: pale yellow Clarity After: clear Artifacts: _____
Comments: Results reported in mg/Kg as received

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

EC-02 RINSATE 03

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): WATER Lab Sample ID: 674797
Level (low/med): LOW Date Received: 07/07/06
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.87	B		MS
7440-43-9	Cadmium	0.52	B		MS
7439-92-1	Lead	50.4			MS
7440-66-6	Zinc	114			MS

Color Before: pink Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: _____

Form I - IN

USEPA-CLP FORMS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

Field Blank D1

Lab Name: STL BURLINGTON Contract: 26000
Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168
Matrix (soil/water): WATER Lab Sample ID: 674802
Level (low/med): LOW Date Received: 07/07/06
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	0.10	U		MS
7440-43-9	Cadmium	0.10	U		MS
7439-92-1	Lead	0.10	U		MS
7440-66-6	Zinc	1.8	B		MS

Color Before: colorless Clarity Before: clear Texture: _____
Color After: colorless Clarity After: clear Artifacts: _____
Comments: _____

Form I - IN

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 26000
 Lab Code: STLVT Case No.: 26000 SAS No.: SDG No.: 115168
 Initial Calibration Source: Inorganic Ventures/Fisher
 Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25.0	25.71	102.8	10.0	9.86	98.6	10.00	100.0	MS
Cadmium	25.0	25.89	103.6	10.0	9.99	99.9	9.94	99.4	MS
Lead	25.0	24.92	99.7	10.0	10.02	100.2	9.68	96.8	MS
Zinc	50.0	55.06	110.1	20.0	19.88	99.4	20.03	100.2	MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA-CLP FORMS

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: STL BURLINGTON Contract: 26000

Lab Code: STLVT Case No.: 26000 SAS No.: SDG No.: 115168

Initial Calibration Source: Inorganic Ventures/Fisher

Continuing Calibration Source: SPEX/Fisher

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				10.0	10.08	100.8			MS
Cadmium				10.0	10.09	100.9			MS
Lead				10.0	9.81	98.1			MS
Zinc				20.0	21.22	106.1			MS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

Form II (Part 1) - IN

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank		M
		1	C	2	C	3	C		C	
Arsenic	0.1 U	0.1	U	0.1	U	0.1	U	0.100	U	MS
Cadmium	0.1 U	0.1	U	0.1	U	0.1	U	0.100	U	MS
Lead	0.1 U	0.1	U	0.1	U	0.1	U	-0.131	B	MS
Zinc	0.4 U	0.4	U	0.4	U	-0.4	B	1.766	B	MS

USEPA-CLP FORMS

3

BLANKS

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank		
		1	C	2	C	3	C			
Arsenic								0.010	U	MS
Cadmium								0.023	B	MS
Lead								-0.014	B	MS
Zinc								0.144	B	MS

USEPA-CLP FORMS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: STL BURLINGTON Contract: 26000

Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168

ICP ID Number: TJA ICPMS X5 ICS Source: Inorganic Ventures

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic	0	20	0	19.9	99.5			
Cadmium	0	20	0	20.0	100.0			
Lead	0	20	1	20.6	103.0			
Zinc	0	100	0	95.7	95.7			

USEPA-CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-01 BRO3US

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Matrix (soil/water): TISSUE Level (low/med): LOW% Solids for Sample: 100.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80 - 120	0.7343		0.0074	U	0.73	100.6		MS
Cadmium	80 - 120	0.8051		0.1071	B	0.73	95.6		MS
Lead	80 - 120	0.8445		0.0091	B	0.73	114.4		MS
Zinc	80 - 120	5.1810		4.0191		1.46	79.6	N	MS

Comments:

Form V (PART 1) - IN

USEPA-CLP FORMS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-01 RINSATE 03S

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Matrix (soil/water): WATER Level (low/med): LOW% Solids for Sample: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	80 - 120	21.7700		0.1070	B	20.00	108.3		MS
Cadmium	80 - 120	21.7300		0.4160	B	20.00	106.6		MS
Lead	80 - 120	25.8800		4.4210		20.00	107.3		MS
Zinc	80 - 120	99.2500		53.4600		40.00	114.5		MS

Comments:

Form V (PART 1) - IN

USEPA-CLP FORMS

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

EC-01 BRO3UA

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Matrix (soil/water): TISSUE Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added(SA)	%R	Q	M
Arsenic		11.57		0.10	U	10.0	115.7		MS
Cadmium		13.25		1.46	B	10.0	117.9		MS
Lead		11.75		0.12	B	10.0	116.3		MS
Zinc		78.86		54.66		20.0	121.0		MS

Comments: _____

Form V (PART 2) - IN

USEPA-CLP FORMS

6

DUPLICATES

SAMPLE NO.

EC-01 BRO3UD

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Matrix (soil/water): TISSUE Level (low/med): LOW% Solids for Sample: 100.0 % Solids for Duplicate: 100.0Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		0.0074	U	0.0074	U			MS
Cadmium		0.1071	B	0.0961	B	10.8		MS
Lead		0.0091	B	0.0087	B	4.5		MS
Zinc	1.5	4.0191		3.9652		1.4		MS

USEPA-CLP FORMS

6

DUPLICATES

SAMPLE NO.

EC-01 RINSATE 03D

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Matrix (soil/water): WATER Level (low/med): LOW% Solids for Sample: 0.0 % Solids for Duplicate: 0.0Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		0.1070	B	0.1000	U	200.0		MS
Cadmium		0.4160	B	0.3990	B	4.2		MS
Lead	2.0	4.4210		4.4130		0.2		MS
Zinc	20.0	53.4600		54.3400		1.6		MS

Form VI - IN

USEPA-CLP FORMS

7

LABORATORY CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Solid LCS Source: Inorganic VenturesAqueous LCS Source: Inorganic Ventures

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Arsenic	25.0	28.79	115.2	2.5	2.6		2.0 3.0	104.0
Cadmium	25.0	28.39	113.6	2.5	2.6		2.0 3.0	104.0
Lead	25.0	28.04	112.2	2.5	2.6		2.0 3.0	104.0
Zinc	50.0	57.32	114.6	5.0	5.3		4.0 6.0	106.0

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-01 BRO3UL

Lab Name: STL BURLINGTONContract: 26000Lab Code: STLVTCase No.: 26000

SAS No.: _____

SDG No.: 115168Matrix (soil/water): TISSUE

Level (low/med): _____

LOWConcentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
	C			C					
Arsenic	0.10	U		0.50	U				MS
Cadmium	1.46	B		1.48	B		1.4		MS
Lead	0.12	B		0.50	U		100.0		MS
Zinc	54.66			54.94	B		0.5		MS

Form IX - IN

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EC-01 RINSATE 03L

Lab Name: STL BURLINGTONContract: 26000Lab Code: STLVTCase No.: 26000

SAS No.: _____

SDG No.: 115168Matrix (soil/water): WATER

Level (low/med):

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
	C			C					
Arsenic	0.11	B		0.50	U		100.0		MS
Cadmium	0.42	B		0.50	U		100.0		MS
Lead	4.42			4.00	B		9.5		MS
Zinc	53.46			52.74	B		1.3		MS

Form IX - IN

USEPA-CLP FORMS

9

ICP SERIAL DILUTIONS

SAMPLE NO.

EB01L

Lab Name: STL BURLINGTONContract: 26000Lab Code: STLVTCase No.: 26000

SAS No.: _____

SDG No.: 115168Matrix (soil/water): TISSUE

Level (low/med):

LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)			Serial Dilution Result (S)			% Differ- ence	Q	M
			C			C			
Arsenic	0.10	U		0.50	U				MS
Cadmium	0.30	B		0.50	U		100.0		MS
Lead	0.10	U		0.50	U				MS
Zinc	4.30	B		2.00	U		100.0		MS

Form IX - IN

USEPA-CLP FORMS

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: STL BURLINGTONContract: 26000Lab Code: STLVT Case No.: 26000

SAS No.: _____

SDG No.: 115168ICP ID Number: TJA ICPMS X5Date: 07/01/06

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Isotope	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Arsenic	75		2	0.10	MS
Cadmium	111		2	0.10	MS
Lead	208		2	0.10	MS
Zinc	66		20	0.40	MS

Comments: _____

Form X - IN

USEPA-CLP FORMS

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168ICP ID Number: TJA ICPMS X5 Date: 07/01/06

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Arsenic	15.000	250.0	MS
Cadmium	15.000	250.0	MS
Lead	15.000	250.0	MS
Zinc	15.000	500.0	MS

Comments:

Form XII - IN

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: _____ SDG No.: 115168Method: MS

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
EB01	07/18/06	1.00	100.0
EC-01 BRO3U	07/18/06	1.36	100.0
EC-01 BRO3UD	07/18/06	1.35	100.0
EC-01 BRO3US	07/18/06	1.37	100.0
EC-01 BRO3W	07/18/06	1.35	100.0
EC-02 BRO3U	07/18/06	1.40	100.0
EC-02 BRO3W	07/18/06	1.32	100.0
LCSS071806E	07/18/06	1.00	100.0
PBS071806E	07/18/06	1.00	100.0

USEPA-CLP FORMS

13

PREPARATION LOG

Lab Name: STL BURLINGTON Contract: 26000Lab Code: STLVT Case No.: 26000 SAS No.: SDG No.: 115168Method: MS

EPA Sample No.	Preparation Date	Initial Volume mL	Volume (mL)
EC-01 RINSATE 03	07/12/06	100.0	100.0
EC-01 RINSATE 03D	07/12/06	100.0	100.0
EC-01 RINSATE 03S	07/12/06	100.0	100.0
EC-02 RINSATE 03	07/12/06	100.0	100.0
Field Blank D1	07/12/06	100.0	100.0
LCSW071206B	07/12/06	100.0	100.0
PBW071206B	07/12/06	100.0	100.0

USEPA-CLP FORMS

14

ANALYSIS RUN LOG

Lab Name: STL BURLINGTONContract: 26000Lab Code: STLVTCase No.: 26000

SAS No.: _____

SDG No.: 115168Instrument ID Number: TJA ICPMS X5Method: MSStart Date: 07/25/06End Date: 07/25/06

EPA Sample No.	D/F	Time	% R	Analytes																											
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K E	S G	A L	T V	Z N	C N						
STD0	1.00	1937				X			X					X											X						
STD1	1.00	1943				X			X					X											X						
STD2	1.00	1949				X			X					X											X						
STD3	1.00	1955				X			X					X											X						
ICV	1.00	2002				X			X					X											X						
ICB	1.00	2008				X			X					X											X						
ICSA	1.00	2014				X			X					X											X						
ICSAB	1.00	2020				X			X					X											X						
CCV	1.00	2026				X			X					X											X						
CCB	1.00	2032				X			X					X											X						
PBW071206B	1.00	2038				X			X					X											X						
LCSW071206B	1.00	2044				X			X					X											X						
EC-02 RINSATE 03	1.00	2051				X			X					X											X						
EC-01 RINSATE 03	1.00	2057				X			X					X											X						
EC-01 RINSATE 03L	5.00	2103				X			X					X											X						
EC-01 RINSATE 03S	1.00	2109				X			X					X											X						
EC-01 RINSATE 03D	1.00	2115				X			X					X											X						
Field Blank D1	1.00	2121				X			X					X											X						
PBS071806E	1.00	2127				X			X					X											X						
LCSS071806E	1.00	2133				X			X					X											X						
CCV	1.00	2139				X			X					X											X						
CCB	1.00	2146				X			X					X											X						
EC-02 BRO3W	1.00	2152				X			X					X											X						
EC-02 BRO3U	1.00	2158				X			X					X											X						
EC-01 BRO3W	1.00	2204				X			X					X											X						
EC-01 BRO3U	1.00	2210				X			X					X											X						
EC-01 BRO3UL	5.00	2216				X			X					X											X						
EC-01 BRO3UA	1.00	2222				X			X					X											X						
EC-01 BRO3US	1.00	2228				X			X					X											X						
EC-01 BRO3UD	1.00	2234				X			X					X											X						
EB01	1.00	2240				X			X					X											X						
EB01L	5.00	2247				X			X					X											X						
CCV	1.00	2253				X			X					X											X						
CCB	1.00	2259				X			X					X											X						

Form XIV - IN



Sample Preparation - Metals

STL BURLINGTON

HOMOG_PREP

CLIENT: BURMC4
CASE: 26000
SDG: 115168
ETR: 115168

ANALYST: ASJW/ABC
DATE: 7/11/06

STL Sample ID	Bottle ID	Add Biota to the tared labeled bottle.	Record # of specimens	Record pre-homogenization weight (grams).	Section sample 1-3" if necessary	Use knife/homogenizer, etc. to homogenize	Homogenize 2.0 min or until slurry.	Scrape excess biota from homogenizer into sample jar.	Weigh jar and record post-homogenization weight (grams)	Record method of homogenization for each sample (ie homogenizer, knives, etc.)
693/51										
674803		ASJW/ABC	X	101.37	ASJW/ABC	ASJW/ABC	ASJW/ABC	ASJW/ABC	161.37	HOMOLOGIZER
674795			X	122.84					120.85	
674796			X	122.23					119.90	
674798			X	119.84					115.95	
674799			X	91.80					80.44	
674800			X	61.05					61.05	
674800 799 mg/0.00										
674800 00 1.13/0.00										
<div> <div>ASJW</div> <div>7/11/06</div> </div>										
<div> <div>ASJW</div> <div>07/11/06</div> </div>										

STL Burlington

METALS DIGESTION LOG

Lab ID	Bottle ID	Digestion ¹ Amount	Final Volume	Before Digestion				After Digestion		Comments
				Color	Clarity	Texture	Artifacts	Color	Clarity	
PBW071206B		100mL	100mL							
LCSW071206B										
674797	NA			pink	clear			colorless	clear	
674801				pink						
674802				colorless						
674801 MS				pink						
674801 DP										
JMS 7/12/06										

Page 58 of 100

METALS DIGESTION LOG

[illegible]

¹Unless otherwise noted, the digestion amount is given in (mL) for waters and in (g) for solids and final volume is given in (mL)

Digestion Temperature:

Block 1 °CBlock 3 °CBlock 5 °CBlock 7 °CBlock 9 °CBlock 2 °CBlock 4 °C

Block 6 — °C

Block 8 95 °C

Block 10 $\overline{\quad}^{\circ}\text{C}$

FME002:03.22.06:5
STL Burlington

Page 78 of 100



Sample Handling

FedEx US Airbill
Express

FedEx Tracking Number 8580 1480 7423

1 From
Date 7/6/06

Sender's Name TIM STECHER Phone
Company BURNS-MCDONNELL
Address 9400 WARD PARKWAY
City KANSAS CITY, State MO ZIP 64114

2 Your Internal Billing Reference 3647B

3 To
Recipient's Name DON DAWICKI Phone 802 655 1023
Company STL BURLINGTON
Recipient's Address
Address 208 SOUTH PARK DRIVE SUITE 11
City COLCHESTER State VT ZIP 05446



8580 1480 7423

Recipient's Copy

4a Express Package Service
☒ FedEx Priority Overnight
☐ FedEx Standard Overnight
☐ FedEx First Overnight
☐ FedEx 2Day
☐ FedEx Express Saver

4b Express Freight Service
☐ FedEx 10day Freight
☐ FedEx 2Day Freight
☐ FedEx 3Day Freight

5 Packaging
☐ FedEx Envelope
☐ FedEx Pak
☐ FedEx Box
☐ FedEx Tube
☐ Other

6 Special Handling
☐ SATURDAY Delivery
☐ HOLD Weekday at FedEx Location
☐ HOLD Saturday at FedEx Location

Does this shipment contain dangerous goods?
☒ No
☐ Yes
☐ Yes

7 Payment Bill to:
☒ Sender
☐ Recipient
☐ Third Party
☐ Credit Card
☐ Cash/Check

Total Packages 1
Total Weight
Total Declared Value \$.00
Total Charges

8 NEW Residential Delivery Signature Options
☐ No Signature Required
☐ Direct Signature
☐ Indirect Signature

520

fedex.com 1.800.607.fedex 1.800.463.3339

RECEIVED
7-12-06
M. B. C.

Client: BURMCH	Date Received: 7-7-06	Log In Date: 7-10-06
ETR: 115168	Time Received: 1000	By: MSB
SDG: 115168	Received By: MSB	Signature: Melissa Blewett
Project: 26000	# Coolers Received: 1	PM Signature: [Signature]
Samples Delivered By: <input checked="" type="checkbox"/> Shipping Service <input type="checkbox"/> Courier <input type="checkbox"/> Hand <input type="checkbox"/> Other (specify)		Date: 7/19/06
List Air bill Number(s) or Attach a photocopy of the Air Bill:		

COOLER SCREEN	YES	NO	NA	COMMENTS
There is no evidence to indicate tampering	X			
Custody seals are present and intact	X			
Custody seal numbers are present		X		
If yes, list custody seal numbers:				

IR Gun ID: 62	Correction Factor (CF) = 0 °C				
Cooler 1: 2.5 °C	Cooler 6 °C	Cooler 11 °C	Cooler 16 °C		
Cooler 2: °C	Cooler 7 °C	Cooler 12 °C	Cooler 17 °C		
Cooler 3: °C	Cooler 8 °C	Cooler 13 °C	Cooler 18 °C		
Cooler 4: °C	Cooler 9 °C	Cooler 14 °C	Cooler 19 °C		
Cooler 5: °C	Cooler 10 °C	Cooler 15 °C	Cooler 20 °C		

Some clients require thermal preservation criteria of 2-4°C or other such criteria. The PM must notify SM when alternate criteria is specified.

SAMPLE CONDITION	YES	NO	NA	COMMENTS
Sample containers were received intact	X			
Legible sample labels are affixed to each container	X			

CHAIN OF CUSTODY (COC)	YES	NO	NA	COMMENTS
------------------------	-----	----	----	----------

• Sample ID / Sample Description	X			
• Date of Sample Collection	X			
• Time of Sample Collection	X			
• Identification of the Sampler	X			
• Preservation Type	X			
• Requested Tests Method(s)	X			
• Necessary Signatures	X			

If yes to above, ICOC Record Initiated for every Worksheet

SAMPLE INTEGRITY / USABILITY	YES	NO	NA	COMMENTS
------------------------------	-----	----	----	----------

The sample container matches the COC	X			
Appropriate sample containers were received for the tests requested	X			
Samples were received within holding time	X			
Sufficient amount of sample is provided for requested analyses	X			
VOA vials do not have headspace or a bubble >6mm (1/4" diameter)			X	
Appropriate preservatives were used for the tests requested	X			
pH of inorganic samples checked and is within method specification	X			
If no, attach Inorganic Sample pH Adjustment Form				

[illegible]



Last Page of this Document

TFM Historical Data
USEPA Preliminary Assessment, 1999
Fish Tissue Data

TFM Historical Data
USEPA Preliminary Assessment
1999
Fish Tissue Data

DATA QUALITY ASSURANCE REVIEW

SITE NAME TULSA FUELS AND MANUFACTURING (TFM) SITE, COLLINSVILLE,
TULSA COUNTY, OKLAHOMA.

CERCLIS OKD987096195

TDD NUMBER

S06-98-10-0023

CASE NUMBER/WORK ORDER 6S213

SDG/PROJ. NUMBER 856901

E & E has completed a QA review for SDG No 856901, TFM site. Seven (7) Fish Tissue samples were analyzed for Target Analytes List (TAL) metals and Cyanide by Pace Analytical Services, Houston, Harris County, Texas. Sample numbers are listed below.

SAMPLE NUMBER

11

I2

13

I4

15

16

17

This data package was validated to determine if Quality Control (QC) specifications were achieved, following *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (February, 1994), *Quality Assurance/Quality Control Guidance for Removal Activities* (April, 1990), and the Regional Protocol for Holding Times, Blanks, and VOA Preservation (April 13, 1989). Specific data qualifications are listed in the following discussion.

REVIEWER Moshood O. Leshi

DATE _____

May 10, 1999

INORGANIC DATA EVALUATION

1. Analytical Method:

Samples were prepared and analyzed using the procedures specified in SW 846-6010B analytical methods for Target Analytes List (TAL) metals analysis. The laboratory performed Mercury and Cyanide analyses using SW-7471A and SW-9010A methods respectively.

2. Holding Times:

All samples analyzed met holding time criteria for TAL metals, Mercury, and Cyanide analyses.

3. Initial Calibration:

ICP initial calibration included a blank and three standards. All initial calibration results fell within the control limit of 90 to 110 percent of the true value for TAL metals, 80-120 percent for Mercury, and 85-115 percent for Cyanide.

4. Continuing Calibration:

All ICP results for TAL metals analysis fell within the control limits of 90 to 110 percent of the true values as well as the cold vapor AA method for Mercury at 80-120 percent and the 85-115 percent for Cyanide.

5. Blanks:

No TAL analytes or Mercury and Cyanide concentration were detected above CRDL in the initial, continuing, and the preparation blanks analyzed during the analytical procedures.

6. ICP Interference Check:

All reported percent recovery results for the Interference Check Samples were within the control limits of 80 to 120 percent of the true values except those of Cadmium at 46.7 percent and Iron at 78 percent. However, upon further review of the raw data presented on page 64 of the data package deliverables for the final ICSAB, reported percent recovery for the CADMIUM and IRON analytes could not be verified as reported. As per the raw data, the percent recovery for Cadmium was 89.7 and Iron could not be verified. The lab was contacted for assistance to clarify the data, but did not respond. Thus, based on professional judgement and assuming that the lab reported the 46.7% R for Cadmium in error, and that the reported %R for Iron was nonexistent, no qualifiers will be used to address the data results.

7. Laboratory Control Sample (LCS):

The laboratory did not perform a specific lab control sample (LCS) for the package. However, the lab submitted a result for percent recoveries for a spike LCS which had several analytes as outliers from the established control limits. This may have resulted from the sample matrix effects.

8. Duplicate Sample Analysis:

The lab analyzed **I2** sample for duplicate analysis as per request on the chain of custody. Established QC criteria requires that the Relative Percent Difference (RPD) values for the duplicate sample analysis be less than 35% for solid samples for concentrations greater than five times the CRDL. For sample concentrations less than five times the CRDL, the QC criteria is \pm two times the CRDL for the soil matrix. The RPD for lead was within the established QC criteria of 35%.

9. Spiked Sample Analysis:

The lab analyzed **I2** sample for spike analysis as requested on the Chain of Custody (COC). The pre-distillation/pre-digestion spike recovery for all analytes fell within the 75-125% recovery QC limits except those of Potassium and Silver. However, since the sample concentration for Potassium exceeded the 4X the spike added concentration and there is no requirement for post-digestion analysis for Silver to help determine the rationale for the outlier %R value, no qualifiers will be utilized to address the data.

10. ICP Serial Dilution: Not Necessary, Not Performed.

11. Field Duplicates: No specific field duplicate sample was submitted for analysis.

12. Sample Quantitation and CRDLs:

Concentrations of all reported analytes were correctly calculated and dilution factors adequately applied where necessary.

13. Laboratory Contact

The laboratory was contacted numerous times for assistance at various levels of this data review including providing a sample calculation for reported analytes concentrations for TAL metals, Mercury and Cyanide as per FORM Is since this matrix is altogether different from the routine analysis. The lab was also contacted to provide assistance to locate the raw data relating to the %R value for the final ICP Interference Check Sample (ICS) for Cadmium and Iron analytes as per reports on FORM 4. The laboratory took a long time to respond to these requests which resulted in a request for due date extension for submission of the assessment report for this project to the client. If this laboratory is utilized for a similar analytical procurement in the future, all submitted data should be checked for completeness upon delivery and noted. If any of the pertinent documents and/or information required to adequately review the data are not submitted, an immediate request should be made with ultimate deadlines, and a reduction in payment for the services deducted if such information are not submitted on time.

14. Overall Assessment:

The analytical data is acceptable for use with the qualifications listed in the attached summary.

Data Qualifiers

Data Qualifier Definitions were supplied by the Office of Solid Waste and Emergency Response (September 1989) and are included in the Functional Guidelines. Data qualifiers may be combined (UJ, QJ) with the corresponding combination of meanings. Additional qualifiers may be added to provide additional, more specific information (JL, UC, QJK), modifying the meaning of the primary qualifier. Addition qualifiers utilized by E & E are H, L, K, C, Q, and D.

- U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation or detection limit, which has been adjusted for sample weight/sample volume, extraction volume, percent solids, sample dilution or other analysis specific parameters.

An additional qualifier, "C", may be appended to indicate that while the analyte was detected in the sample, the presence of the analyte may be attributable to blank contamination and the analyte is therefore considered undetected with the sample detection or quantitation limit for the analyte being elevated.

- J - The analyte was analyzed for, but the associated numerical value may not be consistent with the amount actually present in the environmental sample or may not be consistent with the sample detection or quantitation limit. The value is an estimated quantity. The data should be seriously considered for decision-making and are usable for many purposes.

An additional qualifier will be appended to the "J" qualifier that indicates the bias in the reported results:

L Low bias

H High bias

K Unknown bias

- Q The reported concentration is less than the sample quantitation limit for the specific analyte in the sample.

The L and H qualifier will only be employed when a single qualification is required. When more than one quality control parameter affects the analytical result and a conflict results in assigning a bias, the result will be flagged JK.

- R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.
- N - The analysis indicates the presence of analyte for which there is presumptive evidence to make a "tentative identification."
- D - The concentration reported was determined in the re-analysis of the sample at a secondary dilution.

**DATA SUMMARY
INORGANIC ANALYSIS
FOR**

TULSA FUELS AND MANUFACTURING SITE, COLLINSVILLE, TULSA COUNTY, OKLAHOMA

SDG#: 856901

MATRIX: FISH TISSUE

Reviewer: Moshood Leshi

Analyte	SAMPLE NUMBERS													
	Sample ID		Sample ID		Sample ID		Sample ID		Sample ID		Sample ID		Sample ID	
	I1	Q	I2	Q	I3	Q	I4	Q	I5	Q	I6	Q	I7	Q
Aluminum	14.9	U	16.4	U	16.5	U	16.6	U	15.7	U	16.9	U	17.4	U
Antimony	4.47	U	4.91	U	4.96	U	4.97	U	4.72	U	5.07	U	5.22	U
Arsenic	0.746	U	0.818	U	0.827	U	0.828	U	0.787	U	0.845	U	0.87	U
Barium	14.9	U	16.4	U	16.5	U	16.6	U	15.7	U	16.9	U	17.4	U
Beryllium	0.373	U	0.409	U	0.414	U	0.414	U	0.393	U	0.422	U	0.435	U
Cadmium	0.373	U	0.409	U	0.414	U	0.414	U	0.393	U	0.422	U	0.435	U
Calcium	373	U	409	U	678		414	U	393	U	422	U	435	U
Chromium	0.746	U	0.818	U	0.827	U	0.828	U	0.787	U	0.845	U	0.87	U
Cobalt	3.73	U	4.09	U	4.14	U	4.14	U	3.93	U	4.22	U	4.35	U
Copper	1.86	U	2.04	U	2.07	U	2.07	U	1.97	U	2.11	U	2.36	
Iron	7.46	U	8.18	U	8.27	U	8.28	U	10.1		8.45	U	8.7	U
Lead	0.224	U	0.245	U	0.248	U	0.248	U	0.236	U	0.253	U	0.261	U
Magnesium	373	U	409	U	414	U	414		393	U	422	U	435	U
Manganese	1.12	U	4.82		1.64		1.24	U	3.21		1.27	U	4.57	
Mercury	0.0516	U	0.0606	U	0.0651	U	0.0511	U	0.0587	U	0.0507	U	0.0647	U
Nickel	2.98	U	3.27	U	3.31	U	3.31	U	3.15	U	3.38	U	3.48	U
Potassium	3030		3410		3040		3260		3110		3040		3260	
Selenium	0.563		0.409	U	0.691		0.48		0.775		0.422	U	0.474	
Silver	0.746	U	0.818	U	0.827	U	0.828	U	0.787	U	0.845	U	0.87	U
Sodium	634		617		662		671		732		536		657	
Thallium	0.746	U	0.818	U	0.827	U	0.828	U	0.787	U	0.845	U	0.87	U
Vanadium	3.73	U	4.09	U	4.14	U	4.14	U	3.93	U	4.22	U	4.35	U
Zinc	12.5		14.7		8.81		18.1		9.71		8.03		8.27	
Cadmide	0.125	U	0.119	U	0.247		0.122	U	0.119	U	0.123	U	0.124	U

U = Analyte was analyzed for but not detected

J = Estimated value

NA - Not analyzed

C = Raised quantitation limit due to potential blank contamination

Q = Qualifier

R = Data is considered UNUSABLE due to QC Criteria determination

Units: mg/Kg

APPENDIX L
QA/QC Data Reviews

**Oklahoma SEL
RI Phase I Data**

Data Quality Control Review

Date: March 3, 2006

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Shauna Lawrence

Laboratory Information: ODEQ - SEL

707 N. Robinson, Oklahoma City, OK 73102

Phone Number: 405-702-1113

Contact: Susan Elmenhorst-Mensik, QA

Laboratory Job Number(s):

Metals 378867-380131

Metals 380132-380250

Metals 380251 - 384386

Signature of Reviewer: Shauna Lawrence

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review.

Sample BG-SP-01/SS01 (381343) was mislabeled as BG-SP-06/SS01 in the analytical results. Additionally, Sample TR-16/SS03 (379605) was mislabeled as TR-16/SS02 in the analytical results. The samples were analyzed for the requested analyses and no further actions were required. The samples will be identified by the correct sample identification in the following text and/or associated tables.

Samples PD1-02/SD01 (038882) and PD1-02/SD01CF (378885) were submitted in triplicate for matrix spike/matrix spike duplicate (MS/MSD) analyses. These samples were labeled as follows on the chain-of-custody (COC):

- PD1-02/SD01, PD1-02/SD01MS, and PD1-02/SD01MSD (378882 - 378884)
- PDI-02/SD01CF, PDI-02/SD01CFMS, and PDI-02/SD01CFMSD(378885 – 378887)

In addition to providing the requested MS/MSD, the lab also provided unspiked results for PD1-02/SD01MS//PD1-02/SD01MSD and PD1-02//SD01CFMS//PD1-02/SD01MSD. In order to distinguish the unspiked results from the spiked MS/MSD data, the unspiked results were renamed to PD1-02/SD01Rep// PD1-02/SD01Rep2 and PDI-02/SD01CFRep1//PD1-02/SD01Rep2, respectively. All three results for both sets of samples were compared for precision (see Section 9/Table 3).

Sample OFF-04/SD01 (378897) was submitted in triplicate for MS/MSD analysis. The samples were labeled OFF-04/SD01, OFF-04/SD01MS, and OFF-04/SD01MSD on the COC. In addition to providing the requested MS/MSD, the lab also provided unspiked results for OFF-04/SD01MS and OFF-04/SD01MSD. In order to distinguish the unspiked results from the spiked MS/MSD data, the unspiked results were renamed to OFF-04/SD01Rep1 and OFF-04/SD01Rep2, respectively. Results for all three samples were compared for precision (see Section 9/Table 3).

2. Chain-of-Custody Documentation: COCs were appropriately signed.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): All metals analyses for the sediment and soil samples were analyzed within the required method holding time.
5. Method Blanks: No detections of arsenic, cadmium, lead, or zinc were noted in the metals method blanks, where applicable.
6. Laboratory Control Sample (LCS): The LCS percent recovery (REC) for Lead, XRF in the metals, XRF QC Batch #23 was 10.9 percent, which was below the 80 percent QC minimum. The low LCS REC suggests the potential for low bias and/or false negative results in the associated samples. As such, the Lead, XRF results for the following associated samples were qualified as estimated (J-) for low bias and/or possible false negative results:

- OSL-1001/SS01 (382629)
- OSL-1002/SS01 (382630)
- BG-OSL-02/SS01 (383117)
- TRB-11/SS01 (383118)
- BG-OFF-02/SD01 (383119)
- BG-OFF-01/SD01 (384385)
- BG-OFF-1000/SD01 (384386)

7. Matrix Spike (MS)/Matrix Spike Duplicate (MSD):

The laboratory used Sample PD1-02/SD01 (378882) for the MS/MSD samples. The spike amounts of zinc in TCLP QC Batch #1 were less than one-fourth of the original, unspiked concentration for Sample PD1-02/SD01. As such, no conclusion regarding the accuracy of the zinc results could be made using the MS/MSD results. Instead accuracy was assessed using the LCS results and no problems were noted. (Note: Two additional MS/MSDs were analyzed for this QC batch on site-specific samples and all results were within QC limits.)

All other MS/MSDs were performed on project-specific samples and results were within QC limits. MS/MSDs were performed for select TCLP and ICP metals QC batches. As noted subsequently, the XRF QC batches were analyzed and reported with laboratory duplicate comparisons.

8. Laboratory Duplicates: Laboratory duplicates were performed in lieu of MS/MSDs for the XRF metals analyses. The relative percent differences (RPDs) between the following laboratory duplicates exceeded the 25 percent laboratory QC maximum:

XRF QC Batch	Sample ID Number	Analytes	RPD	Associated Samples Qualified as Estimated (J*)
#5	379600	Zinc, XRF	31.3	Lab Numbers W2-030 – W2-045
#6	380099	Arsenic, XRF	30.3	Lab Number
		Lead, XRF	30.2	W3-005 only (See Below)
#10	380160	Arsenic, XRF	25.2	Lab Number
		Lead, XRF	28.9	W3-066 only (See Below)
#15	380251	Arsenic, XRF	26.1	Lab Numbers W3-144 – W3-159
#22	382617	Lead, XRF	27.9	Lab Number W5-065 only (See Below)

These high laboratory duplicate RPDs suggest problems with analytical precision. To account for potential precision problems, all associated samples for XRF QC Batches #5 and #15 were qualified as estimated (J*). Because a second laboratory duplicate was performed and within QC limits for XRF QC Batches #6, #10, and #22, only the sample used for the laboratory duplicate analysis received this qualification. (See Table 2)

9. Field Duplicates: The following samples were collected and analyzed in duplicate or triplicate. The field duplicate comparison was assessed by comparing the results between the field duplicate pairs. If both results were less than five times the respective reporting limit, the sensitivity test was applied. If one or more of the results were greater than five times the reporting limit, the RPD was calculated. The RPD QC limit was 40 percent for soil samples. The field duplicate pair was qualitative in nature and no data qualifiers were added based solely on the field duplicate comparison. All data were adequately replicated unless noted below:

- BG-OFF-01/SD01 and BG-OFF-1000/SD01) – All OK
- PD-01/SD01 and PD-1000/SD01 – All OK
- OFF-08/SD01 and OFF-1000/SD01 – All OK
- OSL-17/SS01 and OSL-1002/SS01 – All OK
- OSL-25/SS01 and OSL-1004/SS01 – All OK

- OSL-37/SS01 and OSL-1001/SS01 – All OK
- OSL-41/SS01 and OSL-1003/SS01 – All OK
- OSL-50/SS01 and OSL-1000/SS01 – The RPD between the Zinc, ICP results exceeded the QC limit.
- OSL-73/SS01 and OSL-1005/SS01 – All OK
- PZ-07/SS02 and PZ-1000/SS02 – All OK
- PZ-09/SS04 and PZ-1002/SS04 – The RPDs between the Cadmium, XRF, Lead, XRF, and Zinc, XRF exceeded the QC limit. Additionally, the Arsenic, XRF results failed the sensitivity test.
- SMP-03/SD01 and SMP-1000/SD01 – The RPDs between the Arsenic, XRF and Cadmium, XRF exceeded the QC limit. Additionally, the Lead, XRF and Zinc, XRF results failed the sensitivity test.
- SMP03/SD01CF and SMP-1000/SD01CF– All OK
- SP-01/SS01 and SP-1000/SS01 – All OK
- SP-06/SS02 and SP-1001/SS02 – All OK
- SP-11/SS01 and SP-1002/SS01 – All OK
- SP-16/SS03 and SP-1001/SS03 – The RPD between the Zinc, XRF exceeded the QC limit.
- SP-19/SS01 and SP-1004/SS01 – All OK
- SP-22/SS02 and SP-1005/SS02 – The RPD between the Zinc, XRF exceeded the QC limit.
- SP-25/SS02 and SP-1006/SS02 – The RPDs between the Zinc, ICP and Zinc, XRF exceeded the QC limit. Additionally, the Cadmium, TCLP results failed the sensitivity test.
- SP-29/SS02 and SP-1007/SS02 – The RPDs between Arsenic, XRF, Cadmium, XRF, Lead, XRF, and Zinc, XRF exceeded the QC limit.
- SP-32/SS03 and SP-1008/SS03 – All OK
- SP-36/SS02 and SP-1009/SS02 – All OK
- SP-39/SS03 and SP-1010/SS03 – The RPD between the Zinc, XRF exceeded the QC limit.
- SP-43/SS01 and SP-1011/SS01 – All OK
- SP-46/SS02 and SP-1012/SS02 – All OK
- SP-49/SS03 and SP-1013/SS03 – All OK
- SP-53/SS01 and SP-1014/SS01 –The RPD between the Zinc, XRF exceeded the QC limit.
- TR-01/SS01 and TR-1000/SS01– All OK
- TR-05/SS03 and TR-1001/SS03 – All OK
- TR-09/SS02 and TR-1002/SS02 – The RPDs between the Arsenic, ICP and Zinc, ICP exceeded the QC limit.
- TR-10/SS01 and TR-1000/SS01– The RPD between the Cadmium, XRF exceeded the QC limit.
- TR-14/SS01 and TR-1003/SS01 – The RPD between the Arsenic, XRF exceeded the QC limit.
- TR-18/SS03 and TR-1004/SS03 – All OK
- TRB-10/SS01 and TRB-1000/SS01 – All OK
- TSL-04/SS01 and TSL-1000/SS01 – All OK

As noted in Section 1, three samples were collected in triplicate for MS/MSD purposes, however, the laboratory analyzed and reported each unspiked sample. The results between these triplicate samples were compared using the field duplicate guidelines previously mentioned:

- OFF-04/SD01, OFF-04/SD01Rep1, and OFF-04/SD01Rep2–
- PD1-02/SD01, PD1-02/SD01Rep1, and PD1-02/SD01Rep2–
- PD1-02/SD01CF, PD1-02/SD01CFRep1, and PD1-02/SD01CFRep2–

10. Sample Dilution and Reporting Limits: No dilutions were reported by the laboratory. Soil results were reported on a dry weight basis. The laboratory reported any detections above the calibration range as greater than the reporting limit (RL) (> RL).
11. Laboratory Completeness: Samples were analyzed as requested. A total of 1786 parameter data points were generated for these data packages. This included 192 ICP, 150 TCLP, and 1444 XRF data points. No data was rejected (R) as a result of this review.
12. Data Qualification Summary: See attached Table 2 for a summary of sample results and data qualifiers applied during the course of the review.

Attachments

Table 1 – Sample Collection Summary

Table 2 – Data Qualifiers

Table 3 – Field Duplicate Results – Soil and Sediment Samples

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Background Samples									
BG-SP-01/SS01	8/16/2005	W4	W4-016	381343	BACKGROUND			X	
BG-SP-01/SS02	8/16/2005	W4	W4-017	381344	BACKGROUND		X	X	X
BG-SP-01/SS03	8/16/2005	W4	W4-018	381345	BACKGROUND			X	
BG-SP-02/SS01	8/16/2005	W4	W4-019	381346	BACKGROUND			X	
BG-SP-02/SS02	8/16/2005	W4	W4-020	381347	BACKGROUND			X	
BG-SP-02/SS03	8/16/2005	W4	W4-021	381348	BACKGROUND			X	
BG-OSL-01/SS01	8/31/2005	W5	W5-058	382610	BACKGROUND		X	X	X
BG-OSL-02/SS01	9/13/2005	W-6	W6-013	383117	BACKGROUND			X	
Offsite Soil Samples									
OSL-01/SS01	8/30/2005	W5	W5-049	382601	OFF-SOIL		X	X	X
OSL-02/SS01	8/30/2005	W5	W5-048	382600	OFF-SOIL			X	
OSL-03/SS01	8/25/2005	W5	W5-005	382557	OFF-SOIL			X	
OSL-04/SS01	8/30/2005	W5	W5-031	382583	OFF-SOIL			X	
OSL-06/SS01	8/30/2005	W5	W5-033	382585	OFF-SOIL			X	
OSL-07/SS01	8/25/2005	W5	W5-003	382555	OFF-SOIL			X	
OSL-08/SS01	8/25/2005	W5	W5-004	382556	OFF-SOIL			X	
OSL-12/SS01	8/29/2005	W5	W5-015	382567	OFF-SOIL		X	X	X
OSL-14/SS01	8/26/2005	W5	W5-007	382559	OFF-SOIL			X	
OSL-17/SS01	8/31/2005	W5	W5-053	382605	OFF-SOIL		X	X	X
OSL-1002/SS01	8/31/2005	W5	W5-078	382630	OFF-SOIL	Field Dup of OSL-17/SS01	X	X	X
OSL-19/SS01	9/7/2005	W5	W5-026	382578	OFF-SOIL			X	
OSL-21/SS01	8/26/2005	W5	W5-006	382558	OFF-SOIL			X	
OSL-25/SS01	8/29/2005	W5	W5-014	382566	OFF-SOIL			X	
OSL-1004/SS01	8/29/2005	W5	W5-025	382577	OFF-SOIL	Field Dup of OSL-25/SS01		X	
OSL-27/SS01	8/30/2005	W5	W5-038	382590	OFF-SOIL			X	
OSL-29/SS01	8/30/2005	W5	W5-034	382586	OFF-SOIL			X	
OSL-31/SS01	8/31/2005	W5	W5-055	382607	OFF-SOIL			X	
OSL-33/SS01	8/25/2005	W5	W5-002	382554	OFF-SOIL			X	
OSL-34/SS01	8/26/2005	W5	W5-008	382560	OFF-SOIL			X	
OSL-35/SS01	8/24/2005	W5	W5-001	382553	OFF-SOIL			X	
OSL-36/SS01	8/31/2005	W5	W5-068	382620	OFF-SOIL			X	
OSL-36DW/SS01-GRAB	8/31/2005	W5	W5-075	382627	OFF-SOIL	Grab Driveway sample		X	
OSL-37/SS01	8/31/2005	W5	W5-074	382626	OFF-SOIL			X	
OSL-38/SS01	8/31/2005	W5	W5-072	382624	OFF-SOIL			X	
OSL-39/SS01	8/31/2005	W5	W5-071	382623	OFF-SOIL		X	X	X
OSL-1001/SS01	8/31/2005	W5	W5-077	382629	OFF-SOIL	Field Dup of OSL-39/SS01	X	X	X

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples									
OSL-40/SS01	8/29/2005	W5	W5-020	382572	OFF-SOIL	Field Dup of OSL-41/SS01		X	
OSL-41/SS01	8/29/2005	W5	W5-019	382571	OFF-SOIL			X	
OSL-1003/SS01	8/29/2005	W5	W5-024	382576	OFF-SOIL			X	
OSL-46/SS01	8/29/2005	W5	W5-016	382568	OFF-SOIL			X	
OSL-47/SS01	8/29/2005	W5	W5-018	382570	OFF-SOIL			X	
OSL-48/SS01	8/31/2005	W5	W5-069	382621	OFF-SOIL	Field Dup of OSL-50/SS01		X	
OSL-49/SS01	8/31/2005	W5	W5-063	382615	OFF-SOIL			X	
OSL-50/SS01	8/31/2005	W5	W5-067	382619	OFF-SOIL		X	X	X
OSL-1000/SS01	8/31/2005	W5	W5-076	382628	OFF-SOIL		X	X	X
OSL-53/SS01	8/28/2005	W5	W5-011	382563	OFF-SOIL			X	
OSL-54/SS01	8/31/2005	W5	W5-070	382622	OFF-SOIL			X	
OSL-55/SS01	8/31/2005	W5	W5-056	382608	OFF-SOIL			X	
OSL-56/SS01	8/31/2005	W5	W5-066	382618	OFF-SOIL			X	
OSL-57/SS01	8/27/2005	W5	W5-009	382561	OFF-SOIL			X	
OSL-58/SS01	8/27/2005	W5	W5-010	382562	OFF-SOIL			X	
OSL-59/SS01	8/30/2005	W5	W5-041	382593	OFF-SOIL			X	
OSL-61/SS01	8/30/2005	W5	W5-042	382594	OFF-SOIL			X	
OSL-63/SS01	8/31/2005	W5	W5-065	382617	OFF-SOIL			X	
OSL-64/SS01	8/31/2005	W5	W5-057	382609	OFF-SOIL			X	
OSL-65/SS01	8/31/2005	W5	W5-060	382612	OFF-SOIL			X	
OSL-66/SS01	8/31/2005	W5	W5-062	382614	OFF-SOIL	Field Dup of OSL-73/SS01		X	
OSL-67/SS01	8/31/2005	W5	W5-061	382613	OFF-SOIL			X	
OSL-68/SS01	8/29/2005	W5	W5-022	382574	OFF-SOIL			X	
OSL-69/SS01	8/29/2005	W5	W5-021	382573	OFF-SOIL		X	X	X
OSL-73/SS01	8/30/2005	W5	W5-040	382592	OFF-SOIL			X	
OSL-1005/SS01	8/30/2005	W5	W5-052	382604	OFF-SOIL			X	
OSL-78/SS01	8/29/2005	W5	W5-012	382564	OFF-SOIL			X	
OSL-94/SS01	8/30/2005	W5	W5-035	382587	OFF-SOIL			X	
OSL-94DW/SS01-GRAB	8/30/2005	W5	W5-036	382588	OFF-SOIL			X	
OSL-95/SS01	8/30/2005	W5	W5-050	382602	OFF-SOIL			X	
OSL-96/SS01	8/30/2005	W5	W5-027	382579	OFF-SOIL	Grab Driveway Sample		X	
OSL-97A/SS01	8/30/2005	W5	W5-028	382580	OFF-SOIL			X	
OSL-97B/SS01	8/30/2005	W5	W5-029	382581	OFF-SOIL			X	
OSL-98/SS01	8/30/2005	W5	W5-039	382591	OFF-SOIL			X	
OSL-99/SS01	8/31/2005	W5	W5-054	382606	OFF-SOIL			X	

Table 1
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Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples									
TRB-01/SS01	8/31/2005	W5	W5-073	382625	OFF-SOIL			X	
TRB-04/SS01	8/30/2005	W5	W5-037	382589	OFF-SOIL			X	
TRB-08/SS01	8/30/2005	W5	W5-044	382596	OFF-SOIL			X	
TRB-09/SS01	8/30/2005	W5	W5-043	382595	OFF-SOIL			X	
TRB-09DW/SS01-GRAB	8/30/2005	W5	W5-045	382597	OFF-SOIL			X	
TRB-10/SS01	8/29/2005	W5	W5-017	382569	OFF-SOIL		X	X	X
TRB-1000/SS01	8/29/2005	W5	W5-023	382575	OFF-SOIL	Field Dup of TRB-10/SS01	X	X	X
TRB-11/SS01	9/13/2005	W-6	W6-014	383118	OFF-SOIL			X	
TSL-01/SS01	8/30/2005	W5	W5-047	382599	OFF-SOIL			X	
TSL-02/SS01	8/30/2005	W5	W5-046	382598	OFF-SOIL			X	
TSL-03/SS01	8/30/2005	W5	W5-030	382582	OFF-SOIL			X	
TSL-04/SS01	8/30/2005	W5	W5-032	382584	OFF-SOIL		X	X	X
TSL-05/SS01	8/29/2005	W5	W5-013	382565	OFF-SOIL			X	
TSL-06/SS01	8/31/2005	W5	W5-064	382616	OFF-SOIL			X	
TSL-07/SS01	8/31/2005	W5	W5-059	382611	OFF-SOIL			X	
TSL-1000/SS01	8/30/2005	W5	W5-051	382603	OFF-SOIL	Field Dup of TSL-04/SS01	X	X	X
Sediment Samples									
BG-OFF-01/SD01	9/29/2005	W-7	W7-009	384385	SEDIMENT			X	
BG-OFF-02/SD01	9/13/2005	W-6	W6-015	383119	SEDIMENT			X	
BG-OFF-1000/SD01	9/29/2005	W-7	W7-010	384386	SEDIMENT	Field Dup of BG-OFF-01/SD01		X	
MSR-01/SD01	7/19/2005	W1	W1-032	378877	SEDIMENT			X	
MSR-02/SD01	7/19/2005	W1	W1-033	378878	SEDIMENT			X	
MSR-03/SD01	7/19/2005	W1	W1-034	378879	SEDIMENT			X	
OFF-01/SD01	7/20/2005	W1	W1-046	378894	SEDIMENT			X	
OFF-02/SD01	7/20/2005	W1	W1-047	378895	SEDIMENT			X	
OFF-03/SD01	7/20/2005	W1	W1-048	378896	SEDIMENT			X	
OFF-04/SD01	7/20/2005	W1	W1-049	378897	SEDIMENT	See Note		X	
OFF-04/SD01Rep1	7/20/2005	W1	W1-050	378898	SEDIMENT	See Note		X	
OFF-04/SD01Rep2	7/20/2005	W1	W1-051	378899	SEDIMENT	See Note		X	
OFF-05/SD01	7/20/2005	W1	W1-052	378900	SEDIMENT			X	
OFF-06/SD01	7/20/2005	W1	W1-053	378901	SEDIMENT			X	
OFF-07/SD01	7/20/2005	W1	W1-054	378902	SEDIMENT			X	
OFF-08/SD01	7/20/2005	W1	W1-055	378903	SEDIMENT			X	
OFF-09/SD01	7/21/2005	W2	W2-002	379558	SEDIMENT			X	

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Sediment Samples									
OFF-10/SD01	7/20/2005	W2	W2-003	379559	SEDIMENT			X	X
OFF-10/SD01CF	7/20/2005	W2	W2-003	379560	SEDIMENT		X		
OFF-1000/SD01	7/20/2005	W1	W1-056	378904	SEDIMENT	Field Dup of OFF-08/SD01		X	
OFF-11/SD01	7/20/2005	W2	W2-004	379561	SEDIMENT			X	
OFF-12/SD01	7/20/2005	W2	W2-005	379562	SEDIMENT			X	
OFF-13/SD01	7/20/2005	W2	W2-006	379563	SEDIMENT			X	
PD1-01/SD01	7/20/2005	W1	W1-036	378881	SEDIMENT			X	
PD1-02/SD01	7/20/2005	W1	W1-037	378882	SEDIMENT	See Note		X	X
PD1-02/SD01Rep1	7/20/2005	W1	W1-038	378883	SEDIMENT	See Note		X	X
PD1-02/SD01Rep2	7/20/2005	W1	W1-039	378884	SEDIMENT	See Note		X	X
PD1-02/SD01CF	7/20/2005	W1	W1-037	378885	SEDIMENT	See Note	X		
PD1-02/SD01CFRep1	7/20/2005	W1	W1-037	378886	SEDIMENT	See Note	X		
PD1-02/SD01CFRep2	7/20/2005	W1	W1-037	378887	SEDIMENT	See Note	X		
PD1-03/SD01	7/20/2005	W1	W1-040	378888	SEDIMENT			X	
PD2-01/SD01	7/20/2005	W1	W1-042	378890	SEDIMENT			X	
PD2-02/SD01	7/20/2005	W1	W1-041	378889	SEDIMENT			X	
PD3-01/SD01	7/20/2005	W1	W1-043	378891	SEDIMENT			X	
PD3-1000/SD01	7/20/2005	W1	W1-044	378892	SEDIMENT	Field Dup of PD3-01/SD01		X	
PD3-02/SD01	7/20/2005	W1	W1-045	378893	SEDIMENT			X	
PD4-01/SD01	7/19/2005	W1	W1-035	378880	SEDIMENT			X	
PD5-01/SD01	7/19/2005	W1	W1-031	378876	SEDIMENT			X	
SMP-01/SD01	7/19/2005	W1	W1-030	378875	SEDIMENT			X	
SMP-02/SD01	7/19/2005	W1	W1-029	378874	SEDIMENT			X	
SMP-03/SD01	7/19/2005	W1	W1-027	378870	SEDIMENT			X	X
SMP-1000/SD01	7/19/2005	W1	W1-028	378871	SEDIMENT	Field Dup of SMP-03/SD01		X	X
SMP-03/SD01CF	7/19/2005	W1	W1-027	378872	SEDIMENT		X		
SMP-1000/SD01CF	7/19/2005	W1	W1-028	378873	SEDIMENT	Field Dup of SMP-03/SD01	X		
SMP-04/SD01	7/19/2005	W1	W1-026	378869	SEDIMENT			X	
SMP-05/SD01	7/19/2005	W1	W1-025	378868	SEDIMENT			X	
SMP-06/SD01	7/19/2005	W1	W1-024	378867	SEDIMENT			X	

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Onsite Soil Samples									
PZ-04/SS01	8/2/2005	W4	W4-001	381328	SITE-SOIL			X	
PZ-04/SS02	8/2/2005	W4	W4-002	381329	SITE-SOIL			X	
PZ-04/SS03	8/2/2005	W4	W4-003	381330	SITE-SOIL			X	
PZ-04/SS04	8/2/2005	W4	W4-004	381331	SITE-SOIL		X	X	X
PZ-04/SS05	8/2/2005	W4	W4-005	381332	SITE-SOIL			X	
PZ-07/SS01	8/2/2005	W4	W4-006	381333	SITE-SOIL			X	
PZ-07/SS02	8/2/2005	W4	W4-007	381334	SITE-SOIL			X	
PZ-07/SS03	8/2/2005	W4	W4-008	381335	SITE-SOIL		X	X	X
PZ-07/SS04	8/2/2005	W4	W4-009	381336	SITE-SOIL			X	
PZ-07/SS05	8/2/2005	W4	W4-010	381337	SITE-SOIL			X	
PZ-09/SS01	8/2/2005	W4	W4-012	381339	SITE-SOIL			X	
PZ-09/SS02	8/2/2005	W4	W4-013	381340	SITE-SOIL			X	
PZ-09/SS04	8/2/2005	W4	W4-014	381341	SITE-SOIL			X	
PZ-1000/SS02	8/2/2005	W4	W4-011	381338	SITE-SOIL	Field Dup of PZ-07/SS02		X	
PZ-1002/SS04	8/2/2005	W4	W4-015	381342	SITE-SOIL	Field Dup of PZ-09-SS04		X	
SP-01/SS01	7/28/2005	W3	W3-020	380114	SITE-SOIL		X	X	X
SP-1000/SS01	7/28/2005	W3	W3-021	380115	SITE-SOIL	Field Dup of SP-01/SS01	X	X	X
SP-01/SS02	7/28/2005	W3	W3-022	380116	SITE-SOIL			X	
SP-01/SS03	7/28/2005	W3	W3-023	380117	SITE-SOIL			X	
SP-02/SS01	7/28/2005	W3	W3-151	380245	SITE-SOIL			X	
SP-03/SS01	7/28/2005	W3	W3-152	380246	SITE-SOIL			X	
SP-03/SS02	7/28/2005	W3	W3-153	380247	SITE-SOIL			X	
SP-03/SS03	7/28/2005	W3	W3-154	380248	SITE-SOIL			X	
SP-04/SS01	7/28/2005	W3	W3-155	380249	SITE-SOIL			X	
SP-05/SS01	7/29/2005	W3	W3-046	380140	SITE-SOIL		X	X	X
SP-06/SS01	7/29/2005	W3	W3-047	380141	SITE-SOIL			X	
SP-06/SS02	7/29/2005	W3	W3-048	380142	SITE-SOIL			X	
SP-1001/SS02	7/29/2005	W3	W3-050	380144	SITE-SOIL	Field Dup of SP-06/SS02		X	
SP-06/SS03	7/29/2005	W3	W3-049	380143	SITE-SOIL			X	
SP-07/SS01	7/29/2005	W3	W3-051	380145	SITE-SOIL			X	
SP-08/SS01	7/28/2005	W3	W3-030	380124	SITE-SOIL			X	
SP-09/SS01	7/28/2005	W3	W3-024	380118	SITE-SOIL			X	
SP-09/SS02	7/28/2005	W3	W3-025	380119	SITE-SOIL			X	
SP-09/SS03	7/28/2005	W3	W3-026	380120	SITE-SOIL			X	

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Onsite Soil Samples									
SP-10/SS01	7/28/2005	W3	W3-016	380110	SITE-SOIL	Field Dup of SP-11/SS01	X	X	X
SP-10/SS02	7/28/2005	W3	W3-017	380111	SITE-SOIL			X	
SP-10/SS03	7/28/2005	W3	W3-018	380112	SITE-SOIL			X	
SP-11/SS01	7/28/2005	W3	W3-109	380203	SITE-SOIL			X	
SP-1002/SS01	7/28/2005	W3	W3-015	380109	SITE-SOIL			X	
SP-11/SS02	7/28/2005	W3	W3-110	380204	SITE-SOIL			X	
SP-11/SS03	7/28/2005	W3	W3-111	380205	SITE-SOIL			X	
SP-12/SS01	7/28/2005	W3	W3-014	380108	SITE-SOIL			X	
SP-13/SS01	7/28/2005	W3	W3-027	380121	SITE-SOIL			X	
SP-13/SS02	7/28/2005	W3	W3-028	380122	SITE-SOIL			X	
SP-13/SS03	7/28/2005	W3	W3-029	380123	SITE-SOIL			X	
SP-14/SS01	7/28/2005	W3	W3-019	380113	SITE-SOIL			X	
SP-15/SS01	7/28/2005	W3	W3-156	380250	SITE-SOIL			X	
SP-16/SS01	7/29/2005	W3	W3-092	380186	SITE-SOIL	Field Dup of SP-16/SS03	X	X	X
SP-16/SS02	7/29/2005	W3	W3-093	380187	SITE-SOIL			X	
SP-16/SS03	7/29/2005	W3	W3-094	380188	SITE-SOIL			X	
SP-1003/SS03	7/29/2005	W3	W3-095	380189	SITE-SOIL			X	
SP-17/SS01	7/29/2005	W3	W3-089	380183	SITE-SOIL			X	
SP-17/SS02	7/29/2005	W3	W3-090	380184	SITE-SOIL			X	
SP-17/SS03	7/29/2005	W3	W3-091	380185	SITE-SOIL			X	
SP-18/SS01	7/29/2005	W3	W3-086	380180	SITE-SOIL			X	
SP-18/SS02	7/29/2005	W3	W3-087	380181	SITE-SOIL			X	
SP-18/SS03	7/29/2005	W3	W3-088	380182	SITE-SOIL			X	
SP-19/SS01	7/29/2005	W3	W3-079	380173	SITE-SOIL			X	
SP-1004/SS01	7/29/2005	W3	W3-082	380176	SITE-SOIL			X	
SP-19/SS02	7/29/2005	W3	W3-080	380174	SITE-SOIL	Field Dup of SP-19/SS01	X	X	X
SP-19/SS03	7/29/2005	W3	W3-081	380175	SITE-SOIL			X	
SP-20/SS01	7/29/2005	W3	W3-062	380156	SITE-SOIL			X	
SP-20/SS02	7/29/2005	W3	W3-063	380157	SITE-SOIL			X	
SP-20/SS03	7/29/2005	W3	W3-064	380158	SITE-SOIL			X	
SP-21/SS01	7/29/2005	W3	W3-059	380153	SITE-SOIL			X	
SP-21/SS02	7/29/2005	W3	W3-060	380154	SITE-SOIL			X	
SP-21/SS03	7/29/2005	W3	W3-061	380155	SITE-SOIL			X	

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Onsite Soil Samples									
SP-22/SS01	7/29/2005	W3	W3-055	380149	SITE-SOIL	Field Dup of SP-22/SS02	X	X	X
SP-22/SS02	7/29/2005	W3	W3-056	380150	SITE-SOIL			X	
SP-1005/SS02	7/29/2005	W3	W3-058	380152	SITE-SOIL			X	
SP-22/SS03	7/29/2005	W3	W3-057	380151	SITE-SOIL			X	
SP-23/SS01	7/29/2005	W3	W3-052	380146	SITE-SOIL			X	
SP-23/SS02	7/29/2005	W3	W3-053	380147	SITE-SOIL			X	
SP-23/SS03	7/29/2005	W3	W3-054	380148	SITE-SOIL			X	
SP-24/SS01	7/29/2005	W3	W3-072	380166	SITE-SOIL			X	
SP-24/SS02	7/29/2005	W3	W3-073	380167	SITE-SOIL			X	
SP-24/SS03	7/29/2005	W3	W3-074	380168	SITE-SOIL			X	
SP-25/SS01	7/29/2005	W3	W3-068	380162	SITE-SOIL	Field Dup of SP-25/SS02		X	
SP-25/SS02	7/29/2005	W3	W3-069	380163	SITE-SOIL		X	X	X
SP-1006/SS02	7/29/2005	W3	W3-071	380165	SITE-SOIL		X	X	X
SP-25/SS03	7/29/2005	W3	W3-070	380164	SITE-SOIL			X	
SP-26/SS01	7/29/2005	W3	W3-065	380159	SITE-SOIL			X	
SP-26/SS02	7/29/2005	W3	W3-066	380160	SITE-SOIL			X	
SP-26/SS03	7/29/2005	W3	W3-067	380161	SITE-SOIL			X	
SP-27/SS01	7/29/2005	W3	W3-083	380177	SITE-SOIL			X	
SP-27/SS02	7/29/2005	W3	W3-084	380178	SITE-SOIL			X	
SP-27/SS03	7/29/2005	W3	W3-085	380179	SITE-SOIL			X	
SP-28/SS01	8/1/2005	W3	W3-121	380215	SITE-SOIL	Field Dup of SP-29/SS02		X	
SP-28/SS02	8/1/2005	W3	W3-122	380216	SITE-SOIL			X	
SP-28/SS03	8/1/2005	W3	W3-123	380217	SITE-SOIL			X	
SP-29/SS01	7/29/2005	W3	W3-096	380190	SITE-SOIL		X	X	X
SP-29/SS02	7/29/2005	W3	W3-097	380191	SITE-SOIL			X	
SP-1007/SS02	7/29/2005	W3	W3-099	380193	SITE-SOIL			X	
SP-29/SS03	7/29/2005	W3	W3-098	380192	SITE-SOIL			X	
SP-30/SS01	8/1/2005	W3	W3-112	380206	SITE-SOIL			X	
SP-30/SS02	8/1/2005	W3	W3-113	380207	SITE-SOIL			X	
SP-30/SS03	8/1/2005	W3	W3-114	380208	SITE-SOIL			X	
SP-31/SS01	8/1/2005	W3	W3-115	380209	SITE-SOIL			X	
SP-31/SS02	8/1/2005	W3	W3-116	380210	SITE-SOIL			X	
SP-31/SS03	8/1/2005	W3	W3-117	380211	SITE-SOIL			X	

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Onsite Soil Samples									
SP-32/SS01	8/1/2005	W3	W3-100	380194	SITE-SOIL	Field Dup of SP-32/SS03	X	X	X
SP-32/SS02	8/1/2005	W3	W3-101	380195	SITE-SOIL			X	
SP-32/SS03	8/1/2005	W3	W3-102	380196	SITE-SOIL			X	
SP-33/SS01	8/1/2005	W3	W3-157	380251	SITE-SOIL			X	
SP-33/SS02	8/1/2005	W3	W3-158	380252	SITE-SOIL			X	
SP-33/SS03	8/1/2005	W3	W3-159	380253	SITE-SOIL			X	
SP-1008/SS03	8/1/2005	W3	W3-103	380197	SITE-SOIL			X	
SP-34/SS01	8/1/2005	W3	W3-131	380225	SITE-SOIL			X	
SP-34/SS02	8/1/2005	W3	W3-132	380226	SITE-SOIL			X	
SP-34/SS03	8/1/2005	W3	W3-133	380227	SITE-SOIL			X	
SP-35/SS01	8/1/2005	W3	W3-128	380222	SITE-SOIL	Field Dup of SP-36/SS02	X	X	X
SP-35/SS02	8/1/2005	W3	W3-129	380223	SITE-SOIL			X	
SP-35/SS03	8/1/2005	W3	W3-130	380224	SITE-SOIL			X	
SP-36/SS01	8/1/2005	W3	W3-124	380218	SITE-SOIL			X	
SP-36/SS02	8/1/2005	W3	W3-125	380219	SITE-SOIL			X	
SP-1009/SS02	8/1/2005	W3	W3-126	380220	SITE-SOIL			X	
SP-36/SS03	8/1/2005	W3	W3-127	380221	SITE-SOIL			X	
SP-37/SS01	8/1/2005	W3	W3-118	380212	SITE-SOIL			X	
SP-37/SS02	8/1/2005	W3	W3-119	380213	SITE-SOIL			X	
SP-37/SS03	8/1/2005	W3	W3-120	380214	SITE-SOIL			X	
SP-38/SS01	8/1/2005	W3	W3-104	380198	SITE-SOIL	Field Dup of SP-39/SS03	X	X	X
SP-38/SS02	8/1/2005	W3	W3-105	380199	SITE-SOIL			X	
SP-38/SS03	8/1/2005	W3	W3-134	380228	SITE-SOIL			X	
SP-39/SS01	7/29/2005	W3	W3-075	380169	SITE-SOIL			X	
SP-39/SS02	7/29/2005	W3	W3-076	380170	SITE-SOIL			X	
SP-39/SS03	7/29/2005	W3	W3-077	380171	SITE-SOIL			X	
SP-1010/SS03	7/29/2005	W3	W3-078	380172	SITE-SOIL			X	
SP-40/SS01	7/28/2005	W3	W3-004	380098	SITE-SOIL			X	
SP-40/SS02	7/28/2005	W3	W3-005	380099	SITE-SOIL			X	
SP-40/SS03	7/28/2005	W3	W3-006	380100	SITE-SOIL			X	
SP-41/SS01	8/1/2005	W3	W3-135	380229	SITE-SOIL	Field Dup of SP-42/SS02	X	X	X
SP-41/SS02	8/1/2005	W3	W3-160	380254	SITE-SOIL			X	
SP-41/SS03	8/1/2005	W3	W3-161	380255	SITE-SOIL			X	
SP-42/SS01	8/1/2005	W3	W3-136	380230	SITE-SOIL			X	
SP-42/SS02	8/1/2005	W3	W3-137	380231	SITE-SOIL			X	
SP-42/SS03	8/1/2005	W3	W3-138	380232	SITE-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Onsite Soil Samples									
SP-43/SS01	8/1/2005	W3	W3-139	380233	SITE-SOIL	Field Dup of SP-43/SS01	X	X	X
SP-1011/SS01	8/1/2005	W3	W3-140	380234	SITE-SOIL			X	
SP-43/SS02	8/1/2005	W3	W3-141	380235	SITE-SOIL			X	
SP-43/SS03	8/1/2005	W3	W3-142	380236	SITE-SOIL			X	
SP-44/SS01	8/1/2005	W3	W3-150	380244	SITE-SOIL			X	
SP-44/SS02	8/1/2005	W3	W3-162	380256	SITE-SOIL			X	
SP-44/SS03	8/1/2005	W3	W3-163	380257	SITE-SOIL			X	
SP-45/SS01	8/1/2005	W3	W3-143	380237	SITE-SOIL			X	
SP-45/SS02	8/1/2005	W3	W3-144	380238	SITE-SOIL			X	
SP-45/SS03	8/1/2005	W3	W3-145	380239	SITE-SOIL			X	
SP-46/SS01	8/1/2005	W3	W3-146	380240	SITE-SOIL	Field Dup of SP-46/SS02	X	X	X
SP-46/SS02	8/1/2005	W3	W3-147	380241	SITE-SOIL			X	
SP-1012/SS02	8/1/2005	W3	W3-148	380242	SITE-SOIL			X	
SP-46/SS03	8/1/2005	W3	W3-149	380243	SITE-SOIL			X	
SP-47/SS01	7/28/2005	W3	W3-007	380101	SITE-SOIL			X	
SP-47/SS02	7/28/2005	W3	W3-008	380102	SITE-SOIL			X	
SP-47/SS03	7/28/2005	W3	W3-009	380103	SITE-SOIL			X	
SP-48/SS01	7/28/2005	W3	W3-106	380200	SITE-SOIL			X	
SP-48/SS02	7/28/2005	W3	W3-107	380201	SITE-SOIL			X	
SP-48/SS03	7/28/2005	W3	W3-108	380202	SITE-SOIL			X	
SP-49/SS01	7/28/2005	W3	W3-010	380104	SITE-SOIL	Field Dup of SP-49/SS03	X	X	X
SP-49/SS02	7/28/2005	W3	W3-011	380105	SITE-SOIL			X	
SP-49/SS03	7/28/2005	W3	W3-012	380106	SITE-SOIL			X	
SP-1013/SS03	7/28/2005	W3	W3-013	380107	SITE-SOIL			X	
SP-50/SS01	7/28/2005	W3	W3-001	380095	SITE-SOIL			X	
SP-50/SS02	7/28/2005	W3	W3-002	380096	SITE-SOIL			X	
SP-50/SS03	7/28/2005	W3	W3-003	380097	SITE-SOIL			X	
SP-51/SS01	8/1/2005	W3	W3-164	380258	SITE-SOIL			X	
SP-51/SS02	8/1/2005	W3	W3-165	380259	SITE-SOIL			X	
SP-51/SS03	8/1/2005	W3	W3-166	380260	SITE-SOIL			X	
SP-52/SS01	8/1/2005	W3	W3-167	380261	SITE-SOIL	Field Dup of SP-53/SS01	X	X	X
SP-52/SS02	8/1/2005	W3	W3-168	380262	SITE-SOIL			X	
SP-52/SS03	8/1/2005	W3	W3-169	380263	SITE-SOIL			X	
SP-53/SS01	8/1/2005	W3	W3-170	380264	SITE-SOIL			X	
SP-1014/ SS01	8/1/2005	W3	W3-171	380265	SITE-SOIL			X	
SP-53/SS02	8/1/2005	W3	W3-172	380266	SITE-SOIL			X	
SP-53/SS03	8/1/2005	W3	W3-173	380267	SITE-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Onsite Soil Samples									
TR-01/SS01	7/26/2005	W2	W2-007	379564	SITE-SOIL	Field Dup of TR-01/SS01	X	X	X
TR-1000/SS01	7/26/2005	W2	W2-008	379565	SITE-SOIL			X	
TR-01/SS02	7/26/2005	W2	W2-009	379566	SITE-SOIL			X	
TR-01/SS03	7/26/2005	W2	W2-010	379567	SITE-SOIL			X	
TR-02/SS01	7/26/2005	W2	W2-011	379568	SITE-SOIL			X	
TR-02/SS03	7/26/2005	W2	W2-012	379569	SITE-SOIL			X	
TR-03/SS01	7/26/2005	W2	W2-013	379570	SITE-SOIL			X	
TR-03/SS02	7/26/2005	W2	W2-014	379571	SITE-SOIL			X	
TR-03/SS03	7/26/2005	W2	W2-015	379572	SITE-SOIL			X	
TR-04/SS01	7/26/2005	W2	W2-016	379573	SITE-SOIL			X	
TR-04/SS03	7/26/2005	W2	W2-017	379574	SITE-SOIL	Field Dup of TR-05/SS03	X	X	X
TR-05/SS01	7/26/2005	W2	W2-018	379575	SITE-SOIL			X	
TR-05/SS02	7/26/2005	W2	W2-019	379576	SITE-SOIL			X	
TR-05/SS03	7/26/2005	W2	W2-020	379577	SITE-SOIL			X	
TR-1001/SS03	7/26/2005	W2	W2-021	379578	SITE-SOIL			X	
TR-06/SS01	7/26/2005	W2	W2-022	379579	SITE-SOIL			X	
TR-06/SS03	7/26/2005	W2	W2-023	379580	SITE-SOIL			X	
TR-07/SS01	7/26/2005	W2	W2-024	379581	SITE-SOIL			X	
TR-07/SS02	7/26/2005	W2	W2-025	379582	SITE-SOIL			X	
TR-07/SS03	7/26/2005	W2	W2-026	379583	SITE-SOIL			X	
TR-08/SS01	7/26/2005	W2	W2-027	379584	SITE-SOIL	Field Dup of TR-09/SS02	X	X	X
TR-08/SS03	7/26/2005	W2	W2-028	379585	SITE-SOIL			X	
TR-09/SS01	7/27/2005	W2	W2-035	379592	SITE-SOIL			X	
TR-09/SS02	7/27/2005	W2	W2-036	379593	SITE-SOIL			X	
TR-1002/SS02	7/27/2005	W2	W2-037	379594	SITE-SOIL			X	
TR-09/SS03	7/27/2005	W2	W2-038	379595	SITE-SOIL			X	
TR-10/SS01	7/27/2005	W2	W2-039	379596	SITE-SOIL			X	
TR-10/SS03	7/27/2005	W2	W2-040	379597	SITE-SOIL			X	
TR-11/SS01	7/26/2005	W2	W2-029	379586	SITE-SOIL			X	
TR-11/SS02	7/26/2005	W2	W2-030	379587	SITE-SOIL			X	
TR-11/SS03	7/26/2005	W2	W2-031	379588	SITE-SOIL			X	
TR-12/SS01	7/28/2005	W3	W3-031	380125	SITE-SOIL			X	
TR-12/SS03	7/28/2005	W3	W3-032	380126	SITE-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Onsite Soil Samples									
TR-13/SS01	7/27/2005	W2	W2-041	379598	SITE-SOIL	Field Dup of TR-14/SS01	X	X	X
TR-13/SS02	7/27/2005	W2	W2-042	379599	SITE-SOIL			X	
TR-13/SS03	7/27/2005	W2	W2-043	379600	SITE-SOIL			X	
TR-14/SS01	7/27/2005	W2	W2-044	379601	SITE-SOIL			X	
TR-1003/SS01	7/27/2005	W2	W2-045	379602	SITE-SOIL			X	
TR-14/SS03	7/27/2005	W2	W2-046	379603	SITE-SOIL			X	
TR-15/SS01	7/26/2005	W2	W2-032	379589	SITE-SOIL			X	
TR-15/SS02	7/26/2005	W2	W2-033	379590	SITE-SOIL			X	
TR-15/SS03	7/26/2005	W2	W2-034	379591	SITE-SOIL			X	
TR-16/SS01	7/27/2005	W2	W2-047	379604	SITE-SOIL			X	
TR-16/SS02	7/27/2005	W2	W2-048	379605	SITE-SOIL	Field Dup of TR-18/SS03	X	X	X
TR-17/SS01	7/28/2005	W3	W3-033	380127	SITE-SOIL			X	
TR-17/SS02	7/28/2005	W3	W3-034	380128	SITE-SOIL			X	
TR-17/SS03	7/28/2005	W3	W3-035	380129	SITE-SOIL			X	
TR-18/SS01	7/28/2005	W3	W3-036	380130	SITE-SOIL			X	
TR-18/SS03	7/28/2005	W3	W3-037	380131	SITE-SOIL			X	
TR-1004/SS03	7/28/2005	W3	W3-038	380132	SITE-SOIL			X	
TR-19/SS01	7/28/2005	W3	W3-039	380133	SITE-SOIL			X	
TR-19/SS02	7/28/2005	W3	W3-040	380134	SITE-SOIL			X	
TR-19/SS03	7/28/2005	W3	W3-041	380135	SITE-SOIL			X	
TR-20/SS1	7/28/2005	W3	W3-042	380136	SITE-SOIL			X	
TR-20/SS3	7/28/2005	W3	W3-043	380137	SITE-SOIL			X	
TR-21/SS01	7/28/2005	W3	W3-044	380138	SITE-SOIL			X	
TR-21/SS03	7/28/2005	W3	W3-045	380139	SITE-SOIL			X	

Notes:

- 1.) Samples PD1-02/SD01, PD1-02/SD01CF, and OFF-04/SD01 were collected in triplicate for MS/MSD analysis. Each sample was labeled as its original name (previously noted), nameMS, and nameMSD, respectively. In addition to providing the requested MS/MSD, the lab also provided unspiked results for the nameMS and nameMSD samples. See Text for further details.
- 2.) Metals analyzed by ICP and XRF include cadmium, lead, zinc, and arsenic. Metals analyzed by TCLP include cadmium, arsenic, and lead.

ICP = Inductively Coupled Plasma

ID = Identification

SDG = Sample Delivery Group

TCLP = Toxicity Characteristic Leaching Procedure

X = Sample was collected

XRF = X-Ray Fluorescence

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Background Samples								
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Arsenic, Total (ICP)	mg/kg	10		
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Cadmium, Total (ICP)	mg/kg	2	U	
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Lead, Total (ICP)	mg/kg	40		
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Lead, Total (XRF)	mg/kg	22		
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Zinc, Total (ICP)	mg/kg	93		
BG-OSL-01/SS01	8/31/2005	W5-058	METAL	Zinc, Total (XRF)	mg/kg	123		
BG-OSL-01/SS01	8/31/2005	W5-058	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
BG-OSL-01/SS01	8/31/2005	W5-058	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
BG-OSL-01/SS01	8/31/2005	W5-058	TCLPMET	Lead, TCLP	mg/L	0.05	U	
BG-OSL-02/SS01	9/13/2005	W6-013	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-02/SS01	9/13/2005	W6-013	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-02/SS01	9/13/2005	W6-013	METAL	Lead, Total (XRF)	mg/kg	20	U	J-
BG-OSL-02/SS01	9/13/2005	W6-013	METAL	Zinc, Total (XRF)	mg/kg	107		
BG-SP-01/SS01	8/16/2005	W4-016	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS01	8/16/2005	W4-016	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS01	8/16/2005	W4-016	METAL	Lead, Total (XRF)	mg/kg	21		
BG-SP-01/SS01	8/16/2005	W4-016	METAL	Zinc, Total (XRF)	mg/kg	99		
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Arsenic, Total (ICP)	mg/kg	16		
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Lead, Total (ICP)	mg/kg	14		
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Zinc, Total (ICP)	mg/kg	41		
BG-SP-01/SS02	8/16/2005	W4-017	METAL	Zinc, Total (XRF)	mg/kg	64		
BG-SP-01/SS02	8/16/2005	W4-017	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
BG-SP-01/SS02	8/16/2005	W4-017	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
BG-SP-01/SS02	8/16/2005	W4-017	TCLPMET	Lead, TCLP	mg/L	0.05	U	
BG-SP-01/SS03	8/16/2005	W4-018	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS03	8/16/2005	W4-018	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-01/SS03	8/16/2005	W4-018	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-01/SS03	8/16/2005	W4-018	METAL	Zinc, Total (XRF)	mg/kg	35		
BG-SP-02/SS01	8/16/2005	W4-019	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS01	8/16/2005	W4-019	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS01	8/16/2005	W4-019	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-02/SS01	8/16/2005	W4-019	METAL	Zinc, Total (XRF)	mg/kg	154		
BG-SP-02/SS02	8/16/2005	W4-020	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS02	8/16/2005	W4-020	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS02	8/16/2005	W4-020	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-02/SS02	8/16/2005	W4-020	METAL	Zinc, Total (XRF)	mg/kg	50		
BG-SP-02/SS03	8/16/2005	W4-021	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS03	8/16/2005	W4-021	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-02/SS03	8/16/2005	W4-021	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-02/SS03	8/16/2005	W4-021	METAL	Zinc, Total (XRF)	mg/kg	72		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-01/SS01	8/30/2005	W5-049	METAL	Arsenic, Total (ICP)	mg/kg	9		
OSL-01/SS01	8/30/2005	W5-049	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-01/SS01	8/30/2005	W5-049	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-01/SS01	8/30/2005	W5-049	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-01/SS01	8/30/2005	W5-049	METAL	Lead, Total (ICP)	mg/kg	32		
OSL-01/SS01	8/30/2005	W5-049	METAL	Lead, Total (XRF)	mg/kg	34		
OSL-01/SS01	8/30/2005	W5-049	METAL	Zinc, Total (ICP)	mg/kg	94		
OSL-01/SS01	8/30/2005	W5-049	METAL	Zinc, Total (XRF)	mg/kg	127		
OSL-01/SS01	8/30/2005	W5-049	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-01/SS01	8/30/2005	W5-049	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-01/SS01	8/30/2005	W5-049	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-02/SS01	8/30/2005	W5-048	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-02/SS01	8/30/2005	W5-048	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-02/SS01	8/30/2005	W5-048	METAL	Lead, Total (XRF)	mg/kg	27		
OSL-02/SS01	8/30/2005	W5-048	METAL	Zinc, Total (XRF)	mg/kg	199		
OSL-03/SS01	8/25/2005	W5-005	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-03/SS01	8/25/2005	W5-005	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-03/SS01	8/25/2005	W5-005	METAL	Lead, Total (XRF)	mg/kg	110		
OSL-03/SS01	8/25/2005	W5-005	METAL	Zinc, Total (XRF)	mg/kg	239		
OSL-04/SS01	8/30/2005	W5-031	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-04/SS01	8/30/2005	W5-031	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-04/SS01	8/30/2005	W5-031	METAL	Lead, Total (XRF)	mg/kg	32		
OSL-04/SS01	8/30/2005	W5-031	METAL	Zinc, Total (XRF)	mg/kg	207		
OSL-06/SS01	8/30/2005	W5-033	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-06/SS01	8/30/2005	W5-033	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-06/SS01	8/30/2005	W5-033	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-06/SS01	8/30/2005	W5-033	METAL	Zinc, Total (XRF)	mg/kg	50	U	
OSL-07/SS01	8/25/2005	W5-003	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-07/SS01	8/25/2005	W5-003	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-07/SS01	8/25/2005	W5-003	METAL	Lead, Total (XRF)	mg/kg	88		
OSL-07/SS01	8/25/2005	W5-003	METAL	Zinc, Total (XRF)	mg/kg	368		
OSL-08/SS01	8/25/2005	W5-004	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-08/SS01	8/25/2005	W5-004	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-08/SS01	8/25/2005	W5-004	METAL	Lead, Total (XRF)	mg/kg	102		
OSL-08/SS01	8/25/2005	W5-004	METAL	Zinc, Total (XRF)	mg/kg	353		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-1000/SS01	8/31/2005	W5-076	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-1000/SS01	8/31/2005	W5-076	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-1000/SS01	8/31/2005	W5-076	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-1000/SS01	8/31/2005	W5-076	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1000/SS01	8/31/2005	W5-076	METAL	Lead, Total (ICP)	mg/kg	41		
OSL-1000/SS01	8/31/2005	W5-076	METAL	Lead, Total (XRF)	mg/kg	36		
OSL-1000/SS01	8/31/2005	W5-076	METAL	Zinc, Total (ICP)	mg/kg	134		
OSL-1000/SS01	8/31/2005	W5-076	METAL	Zinc, Total (XRF)	mg/kg	175		
OSL-1000/SS01	8/31/2005	W5-076	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-1000/SS01	8/31/2005	W5-076	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-1000/SS01	8/31/2005	W5-076	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-1001/SS01	8/31/2005	W5-077	METAL	Arsenic, Total (ICP)	mg/kg	31		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Arsenic, Total (XRF)	mg/kg	71		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Cadmium, Total (ICP)	mg/kg	23		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Cadmium, Total (XRF)	mg/kg	28		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Lead, Total (ICP)	mg/kg	873		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Lead, Total (XRF)	mg/kg	1120		J-
OSL-1001/SS01	8/31/2005	W5-077	METAL	Zinc, Total (ICP)	mg/kg	2660		
OSL-1001/SS01	8/31/2005	W5-077	METAL	Zinc, Total (XRF)	mg/kg	3370		
OSL-1001/SS01	8/31/2005	W5-077	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-1001/SS01	8/31/2005	W5-077	TCLPMET	Cadmium, TCLP	mg/L	0.192		
OSL-1001/SS01	8/31/2005	W5-077	TCLPMET	Lead, TCLP	mg/L	0.24		
OSL-1002/SS01	8/31/2005	W5-078	METAL	Arsenic, Total (ICP)	mg/kg	12		
OSL-1002/SS01	8/31/2005	W5-078	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-1002/SS01	8/31/2005	W5-078	METAL	Cadmium, Total (ICP)	mg/kg	2		
OSL-1002/SS01	8/31/2005	W5-078	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1002/SS01	8/31/2005	W5-078	METAL	Lead, Total (ICP)	mg/kg	82		
OSL-1002/SS01	8/31/2005	W5-078	METAL	Lead, Total (XRF)	mg/kg	91		J-
OSL-1002/SS01	8/31/2005	W5-078	METAL	Zinc, Total (ICP)	mg/kg	350		
OSL-1002/SS01	8/31/2005	W5-078	METAL	Zinc, Total (XRF)	mg/kg	465		
OSL-1002/SS01	8/31/2005	W5-078	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-1002/SS01	8/31/2005	W5-078	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-1002/SS01	8/31/2005	W5-078	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-1003/SS01	8/29/2005	W5-024	METAL	Arsenic, Total (XRF)	mg/kg	27		
OSL-1003/SS01	8/29/2005	W5-024	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1003/SS01	8/29/2005	W5-024	METAL	Lead, Total (XRF)	mg/kg	297		
OSL-1003/SS01	8/29/2005	W5-024	METAL	Zinc, Total (XRF)	mg/kg	1830		
OSL-1004/SS01	8/29/2005	W5-025	METAL	Arsenic, Total (XRF)	mg/kg	11		
OSL-1004/SS01	8/29/2005	W5-025	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1004/SS01	8/29/2005	W5-025	METAL	Lead, Total (XRF)	mg/kg	137		
OSL-1004/SS01	8/29/2005	W5-025	METAL	Zinc, Total (XRF)	mg/kg	492		
OSL-1005/SS01	8/30/2005	W5-052	METAL	Arsenic, Total (XRF)	mg/kg	17		
OSL-1005/SS01	8/30/2005	W5-052	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1005/SS01	8/30/2005	W5-052	METAL	Lead, Total (XRF)	mg/kg	128		
OSL-1005/SS01	8/30/2005	W5-052	METAL	Zinc, Total (XRF)	mg/kg	429		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-12/SS01	8/29/2005	W5-015	METAL	Arsenic, Total (ICP)	mg/kg	40		
OSL-12/SS01	8/29/2005	W5-015	METAL	Arsenic, Total (XRF)	mg/kg	47		
OSL-12/SS01	8/29/2005	W5-015	METAL	Cadmium, Total (ICP)	mg/kg	4		
OSL-12/SS01	8/29/2005	W5-015	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-12/SS01	8/29/2005	W5-015	METAL	Lead, Total (ICP)	mg/kg	512		
OSL-12/SS01	8/29/2005	W5-015	METAL	Lead, Total (XRF)	mg/kg	616		
OSL-12/SS01	8/29/2005	W5-015	METAL	Zinc, Total (ICP)	mg/kg	835		
OSL-12/SS01	8/29/2005	W5-015	METAL	Zinc, Total (XRF)	mg/kg	1110		
OSL-12/SS01	8/29/2005	W5-015	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-12/SS01	8/29/2005	W5-015	TCLPMET	Cadmium, TCLP	mg/L	0.032		
OSL-12/SS01	8/29/2005	W5-015	TCLPMET	Lead, TCLP	mg/L	0.127		
OSL-14/SS01	8/26/2005	W5-007	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-14/SS01	8/26/2005	W5-007	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-14/SS01	8/26/2005	W5-007	METAL	Lead, Total (XRF)	mg/kg	45		
OSL-14/SS01	8/26/2005	W5-007	METAL	Zinc, Total (XRF)	mg/kg	198		
OSL-17/SS01	8/31/2005	W5-053	METAL	Arsenic, Total (ICP)	mg/kg	11		
OSL-17/SS01	8/31/2005	W5-053	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-17/SS01	8/31/2005	W5-053	METAL	Cadmium, Total (ICP)	mg/kg	2		
OSL-17/SS01	8/31/2005	W5-053	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-17/SS01	8/31/2005	W5-053	METAL	Lead, Total (ICP)	mg/kg	79		
OSL-17/SS01	8/31/2005	W5-053	METAL	Lead, Total (XRF)	mg/kg	91		
OSL-17/SS01	8/31/2005	W5-053	METAL	Zinc, Total (ICP)	mg/kg	346		
OSL-17/SS01	8/31/2005	W5-053	METAL	Zinc, Total (XRF)	mg/kg	432		
OSL-17/SS01	8/31/2005	W5-053	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-17/SS01	8/31/2005	W5-053	TCLPMET	Cadmium, TCLP	mg/L	0.007		
OSL-17/SS01	8/31/2005	W5-053	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-19/SS01	9/7/2005	W5-026	METAL	Arsenic, Total (XRF)	mg/kg	14		
OSL-19/SS01	9/7/2005	W5-026	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-19/SS01	9/7/2005	W5-026	METAL	Lead, Total (XRF)	mg/kg	191		
OSL-19/SS01	9/7/2005	W5-026	METAL	Zinc, Total (XRF)	mg/kg	513		
OSL-21/SS01	8/26/2005	W5-006	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-21/SS01	8/26/2005	W5-006	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-21/SS01	8/26/2005	W5-006	METAL	Lead, Total (XRF)	mg/kg	131		
OSL-21/SS01	8/26/2005	W5-006	METAL	Zinc, Total (XRF)	mg/kg	405		
OSL-25/SS01	8/29/2005	W5-014	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-25/SS01	8/29/2005	W5-014	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-25/SS01	8/29/2005	W5-014	METAL	Lead, Total (XRF)	mg/kg	145		
OSL-25/SS01	8/29/2005	W5-014	METAL	Zinc, Total (XRF)	mg/kg	504		
OSL-27/SS01	8/30/2005	W5-038	METAL	Arsenic, Total (XRF)	mg/kg	27		
OSL-27/SS01	8/30/2005	W5-038	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-27/SS01	8/30/2005	W5-038	METAL	Lead, Total (XRF)	mg/kg	352		
OSL-27/SS01	8/30/2005	W5-038	METAL	Zinc, Total (XRF)	mg/kg	2000		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-29/SS01	8/30/2005	W5-034	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-29/SS01	8/30/2005	W5-034	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-29/SS01	8/30/2005	W5-034	METAL	Lead, Total (XRF)	mg/kg	82		
OSL-29/SS01	8/30/2005	W5-034	METAL	Zinc, Total (XRF)	mg/kg	348		
OSL-31/SS01	8/31/2005	W5-055	METAL	Arsenic, Total (XRF)	mg/kg	21		
OSL-31/SS01	8/31/2005	W5-055	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-31/SS01	8/31/2005	W5-055	METAL	Lead, Total (XRF)	mg/kg	310		
OSL-31/SS01	8/31/2005	W5-055	METAL	Zinc, Total (XRF)	mg/kg	1330		
OSL-33/SS01	8/25/2005	W5-002	METAL	Arsenic, Total (XRF)	mg/kg	17		
OSL-33/SS01	8/25/2005	W5-002	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-33/SS01	8/25/2005	W5-002	METAL	Lead, Total (XRF)	mg/kg	217		
OSL-33/SS01	8/25/2005	W5-002	METAL	Zinc, Total (XRF)	mg/kg	1540		
OSL-34/SS01	8/26/2005	W5-008	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-34/SS01	8/26/2005	W5-008	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-34/SS01	8/26/2005	W5-008	METAL	Lead, Total (XRF)	mg/kg	82		
OSL-34/SS01	8/26/2005	W5-008	METAL	Zinc, Total (XRF)	mg/kg	670		
OSL-35/SS01	8/24/2005	W5-001	METAL	Arsenic, Total (XRF)	mg/kg	15		
OSL-35/SS01	8/24/2005	W5-001	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-35/SS01	8/24/2005	W5-001	METAL	Lead, Total (XRF)	mg/kg	205		
OSL-35/SS01	8/24/2005	W5-001	METAL	Zinc, Total (XRF)	mg/kg	1150		
OSL-36/SS01	8/31/2005	W5-068	METAL	Arsenic, Total (XRF)	mg/kg	25		
OSL-36/SS01	8/31/2005	W5-068	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-36/SS01	8/31/2005	W5-068	METAL	Lead, Total (XRF)	mg/kg	514		
OSL-36/SS01	8/31/2005	W5-068	METAL	Zinc, Total (XRF)	mg/kg	1340		
OSL-36DW/SS01-GRAB	8/31/2005	W5-075	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-36DW/SS01-GRAB	8/31/2005	W5-075	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36DW/SS01-GRAB	8/31/2005	W5-075	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-36DW/SS01-GRAB	8/31/2005	W5-075	METAL	Zinc, Total (XRF)	mg/kg	99		
OSL-37/SS01	8/31/2005	W5-074	METAL	Arsenic, Total (XRF)	mg/kg	12		
OSL-37/SS01	8/31/2005	W5-074	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-37/SS01	8/31/2005	W5-074	METAL	Lead, Total (XRF)	mg/kg	179		
OSL-37/SS01	8/31/2005	W5-074	METAL	Zinc, Total (XRF)	mg/kg	744		
OSL-38/SS01	8/31/2005	W5-072	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-38/SS01	8/31/2005	W5-072	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-38/SS01	8/31/2005	W5-072	METAL	Lead, Total (XRF)	mg/kg	167		
OSL-38/SS01	8/31/2005	W5-072	METAL	Zinc, Total (XRF)	mg/kg	678		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-39/SS01	8/31/2005	W5-071	METAL	Arsenic, Total (ICP)	mg/kg	24		
OSL-39/SS01	8/31/2005	W5-071	METAL	Arsenic, Total (XRF)	mg/kg	57		
OSL-39/SS01	8/31/2005	W5-071	METAL	Cadmium, Total (ICP)	mg/kg	19		
OSL-39/SS01	8/31/2005	W5-071	METAL	Cadmium, Total (XRF)	mg/kg	23		
OSL-39/SS01	8/31/2005	W5-071	METAL	Lead, Total (ICP)	mg/kg	677		
OSL-39/SS01	8/31/2005	W5-071	METAL	Lead, Total (XRF)	mg/kg	867		
OSL-39/SS01	8/31/2005	W5-071	METAL	Zinc, Total (ICP)	mg/kg	2350		
OSL-39/SS01	8/31/2005	W5-071	METAL	Zinc, Total (XRF)	mg/kg	2990		
OSL-39/SS01	8/31/2005	W5-071	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-39/SS01	8/31/2005	W5-071	TCLPMET	Cadmium, TCLP	mg/L	0.192		
OSL-39/SS01	8/31/2005	W5-071	TCLPMET	Lead, TCLP	mg/L	0.239		
OSL-40/SS01	8/29/2005	W5-020	METAL	Arsenic, Total (XRF)	mg/kg	54		
OSL-40/SS01	8/29/2005	W5-020	METAL	Cadmium, Total (XRF)	mg/kg	11		
OSL-40/SS01	8/29/2005	W5-020	METAL	Lead, Total (XRF)	mg/kg	794		
OSL-40/SS01	8/29/2005	W5-020	METAL	Zinc, Total (XRF)	mg/kg	2640		
OSL-41/SS01	8/29/2005	W5-019	METAL	Arsenic, Total (XRF)	mg/kg	31		
OSL-41/SS01	8/29/2005	W5-019	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-41/SS01	8/29/2005	W5-019	METAL	Lead, Total (XRF)	mg/kg	300		
OSL-41/SS01	8/29/2005	W5-019	METAL	Zinc, Total (XRF)	mg/kg	1540		
OSL-46/SS01	8/29/2005	W5-016	METAL	Arsenic, Total (XRF)	mg/kg	21		
OSL-46/SS01	8/29/2005	W5-016	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-46/SS01	8/29/2005	W5-016	METAL	Lead, Total (XRF)	mg/kg	342		
OSL-46/SS01	8/29/2005	W5-016	METAL	Zinc, Total (XRF)	mg/kg	915		
OSL-47/SS01	8/29/2005	W5-018	METAL	Arsenic, Total (XRF)	mg/kg	16		
OSL-47/SS01	8/29/2005	W5-018	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-47/SS01	8/29/2005	W5-018	METAL	Lead, Total (XRF)	mg/kg	188		
OSL-47/SS01	8/29/2005	W5-018	METAL	Zinc, Total (XRF)	mg/kg	739		
OSL-48/SS01	8/31/2005	W5-069	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-48/SS01	8/31/2005	W5-069	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-48/SS01	8/31/2005	W5-069	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-48/SS01	8/31/2005	W5-069	METAL	Zinc, Total (XRF)	mg/kg	118		
OSL-49/SS01	8/31/2005	W5-063	METAL	Arsenic, Total (XRF)	mg/kg	37		
OSL-49/SS01	8/31/2005	W5-063	METAL	Cadmium, Total (XRF)	mg/kg	12		
OSL-49/SS01	8/31/2005	W5-063	METAL	Lead, Total (XRF)	mg/kg	571		
OSL-49/SS01	8/31/2005	W5-063	METAL	Zinc, Total (XRF)	mg/kg	1550		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-50/SS01	8/31/2005	W5-067	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-50/SS01	8/31/2005	W5-067	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-50/SS01	8/31/2005	W5-067	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-50/SS01	8/31/2005	W5-067	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-50/SS01	8/31/2005	W5-067	METAL	Lead, Total (ICP)	mg/kg	37		
OSL-50/SS01	8/31/2005	W5-067	METAL	Lead, Total (XRF)	mg/kg	37		
OSL-50/SS01	8/31/2005	W5-067	METAL	Zinc, Total (ICP)	mg/kg	210		
OSL-50/SS01	8/31/2005	W5-067	METAL	Zinc, Total (XRF)	mg/kg	164		
OSL-50/SS01	8/31/2005	W5-067	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-50/SS01	8/31/2005	W5-067	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-50/SS01	8/31/2005	W5-067	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-53/SS01	8/28/2005	W5-011	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-53/SS01	8/28/2005	W5-011	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-53/SS01	8/28/2005	W5-011	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-53/SS01	8/28/2005	W5-011	METAL	Zinc, Total (XRF)	mg/kg	106		
OSL-54/SS01	8/31/2005	W5-070	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-54/SS01	8/31/2005	W5-070	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-54/SS01	8/31/2005	W5-070	METAL	Lead, Total (XRF)	mg/kg	23		
OSL-54/SS01	8/31/2005	W5-070	METAL	Zinc, Total (XRF)	mg/kg	148		
OSL-55/SS01	8/31/2005	W5-056	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-55/SS01	8/31/2005	W5-056	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-55/SS01	8/31/2005	W5-056	METAL	Lead, Total (XRF)	mg/kg	29		
OSL-55/SS01	8/31/2005	W5-056	METAL	Zinc, Total (XRF)	mg/kg	188		
OSL-56/SS01	8/31/2005	W5-066	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-56/SS01	8/31/2005	W5-066	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-56/SS01	8/31/2005	W5-066	METAL	Lead, Total (XRF)	mg/kg	26		
OSL-56/SS01	8/31/2005	W5-066	METAL	Zinc, Total (XRF)	mg/kg	134		
OSL-57/SS01	8/27/2005	W5-009	METAL	Arsenic, Total (XRF)	mg/kg	18		
OSL-57/SS01	8/27/2005	W5-009	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-57/SS01	8/27/2005	W5-009	METAL	Lead, Total (XRF)	mg/kg	116		
OSL-57/SS01	8/27/2005	W5-009	METAL	Zinc, Total (XRF)	mg/kg	293		
OSL-58/SS01	8/27/2005	W5-010	METAL	Arsenic, Total (XRF)	mg/kg	15		
OSL-58/SS01	8/27/2005	W5-010	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-58/SS01	8/27/2005	W5-010	METAL	Lead, Total (XRF)	mg/kg	106		
OSL-58/SS01	8/27/2005	W5-010	METAL	Zinc, Total (XRF)	mg/kg	201		
OSL-59/SS01	8/30/2005	W5-041	METAL	Arsenic, Total (XRF)	mg/kg	20		
OSL-59/SS01	8/30/2005	W5-041	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-59/SS01	8/30/2005	W5-041	METAL	Lead, Total (XRF)	mg/kg	112		
OSL-59/SS01	8/30/2005	W5-041	METAL	Zinc, Total (XRF)	mg/kg	218		
OSL-61/SS01	8/30/2005	W5-042	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-61/SS01	8/30/2005	W5-042	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-61/SS01	8/30/2005	W5-042	METAL	Lead, Total (XRF)	mg/kg	65		
OSL-61/SS01	8/30/2005	W5-042	METAL	Zinc, Total (XRF)	mg/kg	233		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-63/SS01	8/31/2005	W5-065	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
OSL-63/SS01	8/31/2005	W5-065	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-63/SS01	8/31/2005	W5-065	METAL	Lead, Total (XRF)	mg/kg	74		
OSL-63/SS01	8/31/2005	W5-065	METAL	Zinc, Total (XRF)	mg/kg	287		
OSL-64/SS01	8/31/2005	W5-057	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-64/SS01	8/31/2005	W5-057	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-64/SS01	8/31/2005	W5-057	METAL	Lead, Total (XRF)	mg/kg	50		
OSL-64/SS01	8/31/2005	W5-057	METAL	Zinc, Total (XRF)	mg/kg	218		
OSL-65/SS01	8/31/2005	W5-060	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-65/SS01	8/31/2005	W5-060	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-65/SS01	8/31/2005	W5-060	METAL	Lead, Total (XRF)	mg/kg	31		
OSL-65/SS01	8/31/2005	W5-060	METAL	Zinc, Total (XRF)	mg/kg	184		
OSL-66/SS01	8/31/2005	W5-062	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-66/SS01	8/31/2005	W5-062	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-66/SS01	8/31/2005	W5-062	METAL	Lead, Total (XRF)	mg/kg	41		
OSL-66/SS01	8/31/2005	W5-062	METAL	Zinc, Total (XRF)	mg/kg	182		
OSL-67/SS01	8/31/2005	W5-061	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-67/SS01	8/31/2005	W5-061	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-67/SS01	8/31/2005	W5-061	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-67/SS01	8/31/2005	W5-061	METAL	Zinc, Total (XRF)	mg/kg	129		
OSL-68/SS01	8/29/2005	W5-022	METAL	Arsenic, Total (XRF)	mg/kg	17	U	
OSL-68/SS01	8/29/2005	W5-022	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-68/SS01	8/29/2005	W5-022	METAL	Lead, Total (XRF)	mg/kg	280		
OSL-68/SS01	8/29/2005	W5-022	METAL	Zinc, Total (XRF)	mg/kg	199		
OSL-69/SS01	8/29/2005	W5-021	METAL	Arsenic, Total (ICP)	mg/kg	21	U	
OSL-69/SS01	8/29/2005	W5-021	METAL	Arsenic, Total (XRF)	mg/kg	16		
OSL-69/SS01	8/29/2005	W5-021	METAL	Cadmium, Total (ICP)	mg/kg	5		
OSL-69/SS01	8/29/2005	W5-021	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-69/SS01	8/29/2005	W5-021	METAL	Lead, Total (ICP)	mg/kg	197		
OSL-69/SS01	8/29/2005	W5-021	METAL	Lead, Total (XRF)	mg/kg	227		
OSL-69/SS01	8/29/2005	W5-021	METAL	Zinc, Total (ICP)	mg/kg	636		
OSL-69/SS01	8/29/2005	W5-021	METAL	Zinc, Total (XRF)	mg/kg	764		
OSL-69/SS01	8/29/2005	W5-021	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-69/SS01	8/29/2005	W5-021	TCLPMET	Cadmium, TCLP	mg/L	0.017		
OSL-69/SS01	8/29/2005	W5-021	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-73/SS01	8/30/2005	W5-040	METAL	Arsenic, Total (XRF)	mg/kg	12	U	
OSL-73/SS01	8/30/2005	W5-040	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-73/SS01	8/30/2005	W5-040	METAL	Lead, Total (XRF)	mg/kg	100		
OSL-73/SS01	8/30/2005	W5-040	METAL	Zinc, Total (XRF)	mg/kg	356		
OSL-78/SS01	8/29/2005	W5-012	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-78/SS01	8/29/2005	W5-012	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-78/SS01	8/29/2005	W5-012	METAL	Lead, Total (XRF)	mg/kg	49		
OSL-78/SS01	8/29/2005	W5-012	METAL	Zinc, Total (XRF)	mg/kg	153		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
OSL-94/SS01	8/30/2005	W5-035	METAL	Arsenic, Total (XRF)	mg/kg	17		
OSL-94/SS01	8/30/2005	W5-035	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-94/SS01	8/30/2005	W5-035	METAL	Lead, Total (XRF)	mg/kg	286		
OSL-94/SS01	8/30/2005	W5-035	METAL	Zinc, Total (XRF)	mg/kg	988		
OSL-94DW/SS01-GRAB	8/30/2005	W5-036	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-94DW/SS01-GRAB	8/30/2005	W5-036	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-94DW/SS01-GRAB	8/30/2005	W5-036	METAL	Lead, Total (XRF)	mg/kg	62		
OSL-94DW/SS01-GRAB	8/30/2005	W5-036	METAL	Zinc, Total (XRF)	mg/kg	220		
OSL-95/SS01	8/30/2005	W5-050	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-95/SS01	8/30/2005	W5-050	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-95/SS01	8/30/2005	W5-050	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-95/SS01	8/30/2005	W5-050	METAL	Zinc, Total (XRF)	mg/kg	77		
OSL-96/SS01	8/30/2005	W5-027	METAL	Arsenic, Total (XRF)	mg/kg	27		
OSL-96/SS01	8/30/2005	W5-027	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-96/SS01	8/30/2005	W5-027	METAL	Lead, Total (XRF)	mg/kg	409		
OSL-96/SS01	8/30/2005	W5-027	METAL	Zinc, Total (XRF)	mg/kg	6590		
OSL-97A/SS01	8/30/2005	W5-028	METAL	Arsenic, Total (XRF)	mg/kg	13		
OSL-97A/SS01	8/30/2005	W5-028	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97A/SS01	8/30/2005	W5-028	METAL	Lead, Total (XRF)	mg/kg	199		
OSL-97A/SS01	8/30/2005	W5-028	METAL	Zinc, Total (XRF)	mg/kg	474		
OSL-97B/SS01	8/30/2005	W5-029	METAL	Arsenic, Total (XRF)	mg/kg	25		
OSL-97B/SS01	8/30/2005	W5-029	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97B/SS01	8/30/2005	W5-029	METAL	Lead, Total (XRF)	mg/kg	383		
OSL-97B/SS01	8/30/2005	W5-029	METAL	Zinc, Total (XRF)	mg/kg	656		
OSL-98/SS01	8/30/2005	W5-039	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-98/SS01	8/30/2005	W5-039	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-98/SS01	8/30/2005	W5-039	METAL	Lead, Total (XRF)	mg/kg	33		
OSL-98/SS01	8/30/2005	W5-039	METAL	Zinc, Total (XRF)	mg/kg	126		
OSL-99/SS01	8/31/2005	W5-054	METAL	Arsenic, Total (XRF)	mg/kg	10		
OSL-99/SS01	8/31/2005	W5-054	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-99/SS01	8/31/2005	W5-054	METAL	Lead, Total (XRF)	mg/kg	133		
OSL-99/SS01	8/31/2005	W5-054	METAL	Zinc, Total (XRF)	mg/kg	742		
TRB-01/SS01	8/31/2005	W5-073	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TRB-01/SS01	8/31/2005	W5-073	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-01/SS01	8/31/2005	W5-073	METAL	Lead, Total (XRF)	mg/kg	113		
TRB-01/SS01	8/31/2005	W5-073	METAL	Zinc, Total (XRF)	mg/kg	490		
TRB-04/SS01	8/30/2005	W5-037	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TRB-04/SS01	8/30/2005	W5-037	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-04/SS01	8/30/2005	W5-037	METAL	Lead, Total (XRF)	mg/kg	237		
TRB-04/SS01	8/30/2005	W5-037	METAL	Zinc, Total (XRF)	mg/kg	879		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
TRB-08/SS01	8/30/2005	W5-044	METAL	Arsenic, Total (XRF)	mg/kg	39	U	
TRB-08/SS01	8/30/2005	W5-044	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-08/SS01	8/30/2005	W5-044	METAL	Lead, Total (XRF)	mg/kg	546		
TRB-08/SS01	8/30/2005	W5-044	METAL	Zinc, Total (XRF)	mg/kg	2020		
TRB-09/SS01	8/30/2005	W5-043	METAL	Arsenic, Total (XRF)	mg/kg	29	U	
TRB-09/SS01	8/30/2005	W5-043	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09/SS01	8/30/2005	W5-043	METAL	Lead, Total (XRF)	mg/kg	406		
TRB-09/SS01	8/30/2005	W5-043	METAL	Zinc, Total (XRF)	mg/kg	1500		
TRB-09DW/SS01-GRAB	8/30/2005	W5-045	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TRB-09DW/SS01-GRAB	8/30/2005	W5-045	METAL	Cadmium, Total (XRF)	mg/kg	41		
TRB-09DW/SS01-GRAB	8/30/2005	W5-045	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TRB-09DW/SS01-GRAB	8/30/2005	W5-045	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TRB-10/SS01	8/29/2005	W5-017	METAL	Arsenic, Total (ICP)	mg/kg	24	U	
TRB-10/SS01	8/29/2005	W5-017	METAL	Arsenic, Total (XRF)	mg/kg	46		
TRB-10/SS01	8/29/2005	W5-017	METAL	Cadmium, Total (ICP)	mg/kg	15		
TRB-10/SS01	8/29/2005	W5-017	METAL	Cadmium, Total (XRF)	mg/kg	17		
TRB-10/SS01	8/29/2005	W5-017	METAL	Lead, Total (ICP)	mg/kg	580		
TRB-10/SS01	8/29/2005	W5-017	METAL	Lead, Total (XRF)	mg/kg	771		
TRB-10/SS01	8/29/2005	W5-017	METAL	Zinc, Total (ICP)	mg/kg	1640		
TRB-10/SS01	8/29/2005	W5-017	METAL	Zinc, Total (XRF)	mg/kg	2180		
TRB-10/SS01	8/29/2005	W5-017	TCLPMET	Arsenic, TCLP	mg/L	0.05		
TRB-10/SS01	8/29/2005	W5-017	TCLPMET	Cadmium, TCLP	mg/L	0.06		
TRB-10/SS01	8/29/2005	W5-017	TCLPMET	Lead, TCLP	mg/L	0.086		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Arsenic, Total (ICP)	mg/kg	27	U	
TRB-1000/SS01	8/29/2005	W5-023	METAL	Arsenic, Total (XRF)	mg/kg	53		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Cadmium, Total (ICP)	mg/kg	14		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Cadmium, Total (XRF)	mg/kg	20		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Lead, Total (ICP)	mg/kg	672		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Lead, Total (XRF)	mg/kg	837		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Zinc, Total (ICP)	mg/kg	1660		
TRB-1000/SS01	8/29/2005	W5-023	METAL	Zinc, Total (XRF)	mg/kg	2400		
TRB-1000/SS01	8/29/2005	W5-023	TCLPMET	Arsenic, TCLP	mg/L	0.05		
TRB-1000/SS01	8/29/2005	W5-023	TCLPMET	Cadmium, TCLP	mg/L	0.067		
TRB-1000/SS01	8/29/2005	W5-023	TCLPMET	Lead, TCLP	mg/L	0.105		
TRB-11/SS01	9/13/2005	W6-014	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J-
TRB-11/SS01	9/13/2005	W6-014	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-11/SS01	9/13/2005	W6-014	METAL	Lead, Total (XRF)	mg/kg	20	U	
TRB-11/SS01	9/13/2005	W6-014	METAL	Zinc, Total (XRF)	mg/kg	71		
TSL-01/SS01	8/30/2005	W5-047	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-01/SS01	8/30/2005	W5-047	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-01/SS01	8/30/2005	W5-047	METAL	Lead, Total (XRF)	mg/kg	20	U	
TSL-01/SS01	8/30/2005	W5-047	METAL	Zinc, Total (XRF)	mg/kg	142		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples								
TSL-02/SS01	8/30/2005	W5-046	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-02/SS01	8/30/2005	W5-046	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-02/SS01	8/30/2005	W5-046	METAL	Lead, Total (XRF)	mg/kg	70		
TSL-02/SS01	8/30/2005	W5-046	METAL	Zinc, Total (XRF)	mg/kg	232		
TSL-03/SS01	8/30/2005	W5-030	METAL	Arsenic, Total (XRF)	mg/kg	21		
TSL-03/SS01	8/30/2005	W5-030	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-03/SS01	8/30/2005	W5-030	METAL	Lead, Total (XRF)	mg/kg	303		
TSL-03/SS01	8/30/2005	W5-030	METAL	Zinc, Total (XRF)	mg/kg	1160		
TSL-04/SS01	8/30/2005	W5-032	METAL	Arsenic, Total (ICP)	mg/kg	13		
TSL-04/SS01	8/30/2005	W5-032	METAL	Arsenic, Total (XRF)	mg/kg	12		
TSL-04/SS01	8/30/2005	W5-032	METAL	Cadmium, Total (ICP)	mg/kg	3		
TSL-04/SS01	8/30/2005	W5-032	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-04/SS01	8/30/2005	W5-032	METAL	Lead, Total (ICP)	mg/kg	145		
TSL-04/SS01	8/30/2005	W5-032	METAL	Lead, Total (XRF)	mg/kg	177		
TSL-04/SS01	8/30/2005	W5-032	METAL	Zinc, Total (ICP)	mg/kg	517		
TSL-04/SS01	8/30/2005	W5-032	METAL	Zinc, Total (XRF)	mg/kg	692		
TSL-04/SS01	8/30/2005	W5-032	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TSL-04/SS01	8/30/2005	W5-032	TCLPMET	Cadmium, TCLP	mg/L	0.016		
TSL-04/SS01	8/30/2005	W5-032	TCLPMET	Lead, TCLP	mg/L	0.188		
TSL-05/SS01	8/29/2005	W5-013	METAL	Arsenic, Total (XRF)	mg/kg	33		
TSL-05/SS01	8/29/2005	W5-013	METAL	Cadmium, Total (XRF)	mg/kg	14		
TSL-05/SS01	8/29/2005	W5-013	METAL	Lead, Total (XRF)	mg/kg	424		
TSL-05/SS01	8/29/2005	W5-013	METAL	Zinc, Total (XRF)	mg/kg	1210		
TSL-06/SS01	8/31/2005	W5-064	METAL	Arsenic, Total (XRF)	mg/kg	14		
TSL-06/SS01	8/31/2005	W5-064	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-06/SS01	8/31/2005	W5-064	METAL	Lead, Total (XRF)	mg/kg	214		
TSL-06/SS01	8/31/2005	W5-064	METAL	Zinc, Total (XRF)	mg/kg	764		
TSL-07/SS01	8/31/2005	W5-059	METAL	Arsenic, Total (XRF)	mg/kg	12		
TSL-07/SS01	8/31/2005	W5-059	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-07/SS01	8/31/2005	W5-059	METAL	Lead, Total (XRF)	mg/kg	185		
TSL-07/SS01	8/31/2005	W5-059	METAL	Zinc, Total (XRF)	mg/kg	431		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Arsenic, Total (ICP)	mg/kg	14		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-1000/SS01	8/30/2005	W5-051	METAL	Cadmium, Total (ICP)	mg/kg	3		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-1000/SS01	8/30/2005	W5-051	METAL	Lead, Total (ICP)	mg/kg	144		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Lead, Total (XRF)	mg/kg	170		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Zinc, Total (ICP)	mg/kg	551		
TSL-1000/SS01	8/30/2005	W5-051	METAL	Zinc, Total (XRF)	mg/kg	720		
TSL-1000/SS01	8/30/2005	W5-051	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TSL-1000/SS01	8/30/2005	W5-051	TCLPMET	Cadmium, TCLP	mg/L	0.013		
TSL-1000/SS01	8/30/2005	W5-051	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
BG-OFF-01/SD01	9/29/2005	W7-009	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J-
BG-OFF-01/SD01	9/29/2005	W7-009	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OFF-01/SD01	9/29/2005	W7-009	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OFF-01/SD01	9/29/2005	W7-009	METAL	Zinc, Total (XRF)	mg/kg	50		
BG-OFF-02/SD01	9/13/2005	W6-015	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J-
BG-OFF-02/SD01	9/13/2005	W6-015	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OFF-02/SD01	9/13/2005	W6-015	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OFF-02/SD01	9/13/2005	W6-015	METAL	Zinc, Total (XRF)	mg/kg	180		
BG-OFF-1000/SD01	9/29/2005	W7-010	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J-
BG-OFF-1000/SD01	9/29/2005	W7-010	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OFF-1000/SD01	9/29/2005	W7-010	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OFF-1000/SD01	9/29/2005	W7-010	METAL	Zinc, Total (XRF)	mg/kg	52		
MSR-01/SD01	7/19/2005	W1-032	METAL	Arsenic, Total (XRF)	mg/kg	195	>E	
MSR-01/SD01	7/19/2005	W1-032	METAL	Cadmium, Total (XRF)	mg/kg	265		
MSR-01/SD01	7/19/2005	W1-032	METAL	Lead, Total (XRF)	mg/kg	2940		
MSR-01/SD01	7/19/2005	W1-032	METAL	Zinc, Total (XRF)	mg/kg	7000		
MSR-02/SD01	7/19/2005	W1-033	METAL	Arsenic, Total (XRF)	mg/kg	217	>E	
MSR-02/SD01	7/19/2005	W1-033	METAL	Cadmium, Total (XRF)	mg/kg	702		
MSR-02/SD01	7/19/2005	W1-033	METAL	Lead, Total (XRF)	mg/kg	3410		
MSR-02/SD01	7/19/2005	W1-033	METAL	Zinc, Total (XRF)	mg/kg	7000		
MSR-03/SD01	7/19/2005	W1-034	METAL	Arsenic, Total (XRF)	mg/kg	588	>E	
MSR-03/SD01	7/19/2005	W1-034	METAL	Cadmium, Total (XRF)	mg/kg	255		
MSR-03/SD01	7/19/2005	W1-034	METAL	Lead, Total (XRF)	mg/kg	5500		
MSR-03/SD01	7/19/2005	W1-034	METAL	Zinc, Total (XRF)	mg/kg	7000		
OFF-01/SD01	7/20/2005	W1-046	METAL	Arsenic, Total (XRF)	mg/kg	60	U	
OFF-01/SD01	7/20/2005	W1-046	METAL	Cadmium, Total (XRF)	mg/kg	10		
OFF-01/SD01	7/20/2005	W1-046	METAL	Lead, Total (XRF)	mg/kg	923		
OFF-01/SD01	7/20/2005	W1-046	METAL	Zinc, Total (XRF)	mg/kg	1390		
OFF-02/SD01	7/20/2005	W1-047	METAL	Arsenic, Total (XRF)	mg/kg	171	>E	
OFF-02/SD01	7/20/2005	W1-047	METAL	Cadmium, Total (XRF)	mg/kg	146		
OFF-02/SD01	7/20/2005	W1-047	METAL	Lead, Total (XRF)	mg/kg	2720		
OFF-02/SD01	7/20/2005	W1-047	METAL	Zinc, Total (XRF)	mg/kg	7000		
OFF-03/SD01	7/20/2005	W1-048	METAL	Arsenic, Total (XRF)	mg/kg	19		
OFF-03/SD01	7/20/2005	W1-048	METAL	Cadmium, Total (XRF)	mg/kg	55		
OFF-03/SD01	7/20/2005	W1-048	METAL	Lead, Total (XRF)	mg/kg	259		
OFF-03/SD01	7/20/2005	W1-048	METAL	Zinc, Total (XRF)	mg/kg	6330		
OFF-04/SD01	7/20/2005	W1-049	METAL	Arsenic, Total (XRF)	mg/kg	277	>E	
OFF-04/SD01	7/20/2005	W1-049	METAL	Cadmium, Total (XRF)	mg/kg	975		
OFF-04/SD01	7/20/2005	W1-049	METAL	Lead, Total (XRF)	mg/kg	3940		
OFF-04/SD01	7/20/2005	W1-049	METAL	Zinc, Total (XRF)	mg/kg	7000		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
OFF-04/SD01Rep1	7/20/2005	W1-050	METAL	Arsenic, Total (XRF)	mg/kg	267	>E	
OFF-04/SD01Rep1	7/20/2005	W1-050	METAL	Cadmium, Total (XRF)	mg/kg	891		
OFF-04/SD01Rep1	7/20/2005	W1-050	METAL	Lead, Total (XRF)	mg/kg	3930		
OFF-04/SD01Rep1	7/20/2005	W1-050	METAL	Zinc, Total (XRF)	mg/kg	7000		
OFF-04/SD01Rep2	7/20/2005	W1-051	METAL	Arsenic, Total (XRF)	mg/kg	238	>E	
OFF-04/SD01Rep2	7/20/2005	W1-051	METAL	Cadmium, Total (XRF)	mg/kg	700		
OFF-04/SD01Rep2	7/20/2005	W1-051	METAL	Lead, Total (XRF)	mg/kg	3670		
OFF-04/SD01Rep2	7/20/2005	W1-051	METAL	Zinc, Total (XRF)	mg/kg	7000		
OFF-05/SD01	7/20/2005	W1-052	METAL	Arsenic, Total (XRF)	mg/kg	142		
OFF-05/SD01	7/20/2005	W1-052	METAL	Cadmium, Total (XRF)	mg/kg	120		
OFF-05/SD01	7/20/2005	W1-052	METAL	Lead, Total (XRF)	mg/kg	2060		
OFF-05/SD01	7/20/2005	W1-052	METAL	Zinc, Total (XRF)	mg/kg	6030		
OFF-06/SD01	7/20/2005	W1-053	METAL	Arsenic, Total (XRF)	mg/kg	24		
OFF-06/SD01	7/20/2005	W1-053	METAL	Cadmium, Total (XRF)	mg/kg	114		
OFF-06/SD01	7/20/2005	W1-053	METAL	Lead, Total (XRF)	mg/kg	417		
OFF-06/SD01	7/20/2005	W1-053	METAL	Zinc, Total (XRF)	mg/kg	6730		
OFF-07/SD01	7/20/2005	W1-054	METAL	Arsenic, Total (XRF)	mg/kg	79	>E	
OFF-07/SD01	7/20/2005	W1-054	METAL	Cadmium, Total (XRF)	mg/kg	987		
OFF-07/SD01	7/20/2005	W1-054	METAL	Lead, Total (XRF)	mg/kg	1220		
OFF-07/SD01	7/20/2005	W1-054	METAL	Zinc, Total (XRF)	mg/kg	7000		
OFF-08/SD01	7/20/2005	W1-055	METAL	Arsenic, Total (XRF)	mg/kg	59		
OFF-08/SD01	7/20/2005	W1-055	METAL	Cadmium, Total (XRF)	mg/kg	166		
OFF-08/SD01	7/20/2005	W1-055	METAL	Lead, Total (XRF)	mg/kg	769		
OFF-08/SD01	7/20/2005	W1-055	METAL	Zinc, Total (XRF)	mg/kg	6230		
OFF-09/SD01	7/21/2005	W2-002	METAL	Arsenic, Total (XRF)	mg/kg	39		
OFF-09/SD01	7/21/2005	W2-002	METAL	Cadmium, Total (XRF)	mg/kg	167		
OFF-09/SD01	7/21/2005	W2-002	METAL	Lead, Total (XRF)	mg/kg	593		
OFF-09/SD01	7/21/2005	W2-002	METAL	Zinc, Total (XRF)	mg/kg	6650		
OFF-10/SD01	7/20/2005	W2-003	METAL	Arsenic, Total (ICP)	mg/kg	95		
OFF-10/SD01	7/20/2005	W2-003	METAL	Arsenic, Total (ICP)	mg/kg	95		
OFF-10/SD01	7/20/2005	W2-003	METAL	Arsenic, Total (XRF)	mg/kg	161		
OFF-10/SD01	7/20/2005	W2-003	METAL	Arsenic, Total (XRF)	mg/kg	161		
OFF-10/SD01	7/20/2005	W2-003	METAL	Cadmium, Total (ICP)	mg/kg	145		
OFF-10/SD01	7/20/2005	W2-003	METAL	Cadmium, Total (ICP)	mg/kg	145		
OFF-10/SD01	7/20/2005	W2-003	METAL	Cadmium, Total (XRF)	mg/kg	156		
OFF-10/SD01	7/20/2005	W2-003	METAL	Cadmium, Total (XRF)	mg/kg	156		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
OFF-10/SD01	7/20/2005	W2-003	METAL	Lead, Total (ICP)	mg/kg	1690		
OFF-10/SD01	7/20/2005	W2-003	METAL	Lead, Total (ICP)	mg/kg	1690		
OFF-10/SD01	7/20/2005	W2-003	METAL	Lead, Total (XRF)	mg/kg	2220		
OFF-10/SD01	7/20/2005	W2-003	METAL	Lead, Total (XRF)	mg/kg	2220		
OFF-10/SD01	7/20/2005	W2-003	METAL	Zinc, Total (ICP)	mg/kg	15100		
OFF-10/SD01	7/20/2005	W2-003	METAL	Zinc, Total (ICP)	mg/kg	15100		
OFF-10/SD01	7/20/2005	W2-003	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-10/SD01	7/20/2005	W2-003	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Cadmium, TCLP	mg/L	1.53		
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Cadmium, TCLP	mg/L	1.53		
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Lead, TCLP	mg/L	0.499		
OFF-10/SD01	7/20/2005	W2-003	TCLPMET	Lead, TCLP	mg/L	0.499		
OFF-1000/SD01	7/20/2005	W1-056	METAL	Arsenic, Total (XRF)	mg/kg	63		
OFF-1000/SD01	7/20/2005	W1-056	METAL	Cadmium, Total (XRF)	mg/kg	197		
OFF-1000/SD01	7/20/2005	W1-056	METAL	Lead, Total (XRF)	mg/kg	820		
OFF-1000/SD01	7/20/2005	W1-056	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-11/SD01	7/20/2005	W2-004	METAL	Arsenic, Total (XRF)	mg/kg	16		
OFF-11/SD01	7/20/2005	W2-004	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OFF-11/SD01	7/20/2005	W2-004	METAL	Lead, Total (XRF)	mg/kg	140		
OFF-11/SD01	7/20/2005	W2-004	METAL	Zinc, Total (XRF)	mg/kg	520		
OFF-12/SD01	7/20/2005	W2-005	METAL	Arsenic, Total (XRF)	mg/kg	16		
OFF-12/SD01	7/20/2005	W2-005	METAL	Cadmium, Total (XRF)	mg/kg	12		
OFF-12/SD01	7/20/2005	W2-005	METAL	Lead, Total (XRF)	mg/kg	141		
OFF-12/SD01	7/20/2005	W2-005	METAL	Zinc, Total (XRF)	mg/kg	2120		
OFF-13/SD01	7/20/2005	W2-006	METAL	Arsenic, Total (XRF)	mg/kg	16		
OFF-13/SD01	7/20/2005	W2-006	METAL	Cadmium, Total (XRF)	mg/kg	10		
OFF-13/SD01	7/20/2005	W2-006	METAL	Lead, Total (XRF)	mg/kg	182		
OFF-13/SD01	7/20/2005	W2-006	METAL	Zinc, Total (XRF)	mg/kg	3590		
PD1-01/SD01	7/20/2005	W1-036	METAL	Arsenic, Total (XRF)	mg/kg	26		
PD1-01/SD01	7/20/2005	W1-036	METAL	Cadmium, Total (XRF)	mg/kg	151		
PD1-01/SD01	7/20/2005	W1-036	METAL	Lead, Total (XRF)	mg/kg	445		
PD1-01/SD01	7/20/2005	W1-036	METAL	Zinc, Total (XRF)	mg/kg	6220		
PD1-02/SD01	7/20/2005	W1-037	METAL	Arsenic, Total (ICP)	mg/kg	63		
PD1-02/SD01	7/20/2005	W1-037	METAL	Arsenic, Total (ICP)	mg/kg	63		
PD1-02/SD01	7/20/2005	W1-037	METAL	Arsenic, Total (XRF)	mg/kg	168		
PD1-02/SD01	7/20/2005	W1-037	METAL	Arsenic, Total (XRF)	mg/kg	168		
PD1-02/SD01	7/20/2005	W1-037	METAL	Cadmium, Total (ICP)	mg/kg	1400		
PD1-02/SD01	7/20/2005	W1-037	METAL	Cadmium, Total (ICP)	mg/kg	1400		
PD1-02/SD01	7/20/2005	W1-037	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
PD1-02/SD01	7/20/2005	W1-037	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
PD1-02/SD01	7/20/2005	W1-037	METAL	Lead, Total (ICP)	mg/kg	1020		
PD1-02/SD01	7/20/2005	W1-037	METAL	Lead, Total (ICP)	mg/kg	1020		
PD1-02/SD01	7/20/2005	W1-037	METAL	Lead, Total (XRF)	mg/kg	2270		
PD1-02/SD01	7/20/2005	W1-037	METAL	Lead, Total (XRF)	mg/kg	2270		
PD1-02/SD01	7/20/2005	W1-037	METAL	Zinc, Total (ICP)	mg/kg	44700		
PD1-02/SD01	7/20/2005	W1-037	METAL	Zinc, Total (ICP)	mg/kg	44700		
PD1-02/SD01	7/20/2005	W1-037	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD1-02/SD01	7/20/2005	W1-037	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Arsenic, TCLP	mg/L	0.071		
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Arsenic, TCLP	mg/L	0.071		
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Cadmium, TCLP	mg/L	0.016		
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Cadmium, TCLP	mg/L	0.016		
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Lead, TCLP	mg/L	0.116		
PD1-02/SD01	7/20/2005	W1-037	TCLPMET	Lead, TCLP	mg/L	0.116		
PD1-02/SD01Rep1	7/20/2005	W1-038	METAL	Arsenic, Total (XRF)	mg/kg	187		
PD1-02/SD01Rep1	7/20/2005	W1-038	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
PD1-02/SD01Rep1	7/20/2005	W1-038	METAL	Lead, Total (XRF)	mg/kg	2400		
PD1-02/SD01Rep1	7/20/2005	W1-038	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD1-02/SD01Rep1	7/20/2005	W1-038	TCLPMET	Arsenic, TCLP	mg/L	0.066		
PD1-02/SD01Rep1	7/20/2005	W1-038	TCLPMET	Cadmium, TCLP	mg/L	0.036		
PD1-02/SD01Rep1	7/20/2005	W1-038	TCLPMET	Lead, TCLP	mg/L	0.282		
PD1-02/SD01Rep2	7/20/2005	W1-039	METAL	Arsenic, Total (XRF)	mg/kg	195		
PD1-02/SD01Rep2	7/20/2005	W1-039	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
PD1-02/SD01Rep2	7/20/2005	W1-039	METAL	Lead, Total (XRF)	mg/kg	2740		
PD1-02/SD01Rep2	7/20/2005	W1-039	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD1-02/SD01Rep2	7/20/2005	W1-039	TCLPMET	Arsenic, TCLP	mg/L	0.094		
PD1-02/SD01Rep2	7/20/2005	W1-039	TCLPMET	Cadmium, TCLP	mg/L	0.014		
PD1-02/SD01Rep2	7/20/2005	W1-039	TCLPMET	Lead, TCLP	mg/L	0.131		
PD1-03/SD01	7/20/2005	W1-040	METAL	Arsenic, Total (XRF)	mg/kg	96		
PD1-03/SD01	7/20/2005	W1-040	METAL	Cadmium, Total (XRF)	mg/kg	362		
PD1-03/SD01	7/20/2005	W1-040	METAL	Lead, Total (XRF)	mg/kg	1540		
PD1-03/SD01	7/20/2005	W1-040	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD2-01/SD01	7/20/2005	W1-042	METAL	Arsenic, Total (XRF)	mg/kg	52		
PD2-01/SD01	7/20/2005	W1-042	METAL	Cadmium, Total (XRF)	mg/kg	44		
PD2-01/SD01	7/20/2005	W1-042	METAL	Lead, Total (XRF)	mg/kg	942		
PD2-01/SD01	7/20/2005	W1-042	METAL	Zinc, Total (XRF)	mg/kg	4840		
PD2-02/SD01	7/20/2005	W1-041	METAL	Arsenic, Total (XRF)	mg/kg	84		
PD2-02/SD01	7/20/2005	W1-041	METAL	Cadmium, Total (XRF)	mg/kg	330		
PD2-02/SD01	7/20/2005	W1-041	METAL	Lead, Total (XRF)	mg/kg	1200		
PD2-02/SD01	7/20/2005	W1-041	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PD3-01/SD01	7/20/2005	W1-043	METAL	Arsenic, Total (XRF)	mg/kg	20		
PD3-01/SD01	7/20/2005	W1-043	METAL	Cadmium, Total (XRF)	mg/kg	43		
PD3-01/SD01	7/20/2005	W1-043	METAL	Lead, Total (XRF)	mg/kg	375		
PD3-01/SD01	7/20/2005	W1-043	METAL	Zinc, Total (XRF)	mg/kg	2860		

Table 2
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Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
PD3-02/SD01	7/20/2005	W1-045	METAL	Arsenic, Total (XRF)	mg/kg	68	>E	
PD3-02/SD01	7/20/2005	W1-045	METAL	Cadmium, Total (XRF)	mg/kg	220		
PD3-02/SD01	7/20/2005	W1-045	METAL	Lead, Total (XRF)	mg/kg	1060		
PD3-02/SD01	7/20/2005	W1-045	METAL	Zinc, Total (XRF)	mg/kg	7000		
PD3-1000/SD01	7/20/2005	W1-044	METAL	Arsenic, Total (XRF)	mg/kg	23		
PD3-1000/SD01	7/20/2005	W1-044	METAL	Cadmium, Total (XRF)	mg/kg	59		
PD3-1000/SD01	7/20/2005	W1-044	METAL	Lead, Total (XRF)	mg/kg	393		
PD3-1000/SD01	7/20/2005	W1-044	METAL	Zinc, Total (XRF)	mg/kg	2770		
PD4-01/SD01	7/19/2005	W1-035	METAL	Arsenic, Total (XRF)	mg/kg	57	>E	
PD4-01/SD01	7/19/2005	W1-035	METAL	Cadmium, Total (XRF)	mg/kg	121		
PD4-01/SD01	7/19/2005	W1-035	METAL	Lead, Total (XRF)	mg/kg	975		
PD4-01/SD01	7/19/2005	W1-035	METAL	Zinc, Total (XRF)	mg/kg	7000		
PD5-01/SD01	7/19/2005	W1-031	METAL	Arsenic, Total (XRF)	mg/kg	10	U	U
PD5-01/SD01	7/19/2005	W1-031	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PD5-01/SD01	7/19/2005	W1-031	METAL	Lead, Total (XRF)	mg/kg	239		
PD5-01/SD01	7/19/2005	W1-031	METAL	Zinc, Total (XRF)	mg/kg	808		
SMP-01/SD01	7/19/2005	W1-030	METAL	Arsenic, Total (XRF)	mg/kg	14		
SMP-01/SD01	7/19/2005	W1-030	METAL	Cadmium, Total (XRF)	mg/kg	10		
SMP-01/SD01	7/19/2005	W1-030	METAL	Lead, Total (XRF)	mg/kg	180		
SMP-01/SD01	7/19/2005	W1-030	METAL	Zinc, Total (XRF)	mg/kg	1080		
SMP-02/SD01	7/19/2005	W1-029	METAL	Arsenic, Total (XRF)	mg/kg	27		
SMP-02/SD01	7/19/2005	W1-029	METAL	Cadmium, Total (XRF)	mg/kg	21		
SMP-02/SD01	7/19/2005	W1-029	METAL	Lead, Total (XRF)	mg/kg	339		
SMP-02/SD01	7/19/2005	W1-029	METAL	Zinc, Total (XRF)	mg/kg	1710		
SMP-03/SD01	7/19/2005	W1-027	METAL	Arsenic, Total (ICP)	mg/kg	32		
SMP-03/SD01	7/19/2005	W1-027	METAL	Arsenic, Total (ICP)	mg/kg	32		
SMP-03/SD01	7/19/2005	W1-027	METAL	Arsenic, Total (XRF)	mg/kg	22		
SMP-03/SD01	7/19/2005	W1-027	METAL	Arsenic, Total (XRF)	mg/kg	22		
SMP-03/SD01	7/19/2005	W1-027	METAL	Cadmium, Total (ICP)	mg/kg	28		
SMP-03/SD01	7/19/2005	W1-027	METAL	Cadmium, Total (ICP)	mg/kg	28		
SMP-03/SD01	7/19/2005	W1-027	METAL	Cadmium, Total (XRF)	mg/kg	22		
SMP-03/SD01	7/19/2005	W1-027	METAL	Cadmium, Total (XRF)	mg/kg	22		
SMP-03/SD01	7/19/2005	W1-027	METAL	Lead, Total (ICP)	mg/kg	334		
SMP-03/SD01	7/19/2005	W1-027	METAL	Lead, Total (ICP)	mg/kg	334		
SMP-03/SD01	7/19/2005	W1-027	METAL	Lead, Total (XRF)	mg/kg	321		
SMP-03/SD01	7/19/2005	W1-027	METAL	Lead, Total (XRF)	mg/kg	321		
SMP-03/SD01	7/19/2005	W1-027	METAL	Zinc, Total (ICP)	mg/kg	2450		
SMP-03/SD01	7/19/2005	W1-027	METAL	Zinc, Total (ICP)	mg/kg	2450		
SMP-03/SD01	7/19/2005	W1-027	METAL	Zinc, Total (XRF)	mg/kg	3460		
SMP-03/SD01	7/19/2005	W1-027	METAL	Zinc, Total (XRF)	mg/kg	3460		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Arsenic, TCLP	mg/L	0.074		
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Arsenic, TCLP	mg/L	0.074		
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SMP-03/SD01	7/19/2005	W1-027	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SMP-04/SD01	7/19/2005	W1-026	METAL	Arsenic, Total (XRF)	mg/kg	28		
SMP-04/SD01	7/19/2005	W1-026	METAL	Cadmium, Total (XRF)	mg/kg	49		
SMP-04/SD01	7/19/2005	W1-026	METAL	Lead, Total (XRF)	mg/kg	412		
SMP-04/SD01	7/19/2005	W1-026	METAL	Zinc, Total (XRF)	mg/kg	3140		
SMP-05/SD01	7/19/2005	W1-025	METAL	Arsenic, Total (XRF)	mg/kg	31		
SMP-05/SD01	7/19/2005	W1-025	METAL	Cadmium, Total (XRF)	mg/kg	47		
SMP-05/SD01	7/19/2005	W1-025	METAL	Lead, Total (XRF)	mg/kg	425		
SMP-05/SD01	7/19/2005	W1-025	METAL	Zinc, Total (XRF)	mg/kg	3500		
SMP-06/SD01	7/19/2005	W1-024	METAL	Arsenic, Total (XRF)	mg/kg	20		
SMP-06/SD01	7/19/2005	W1-024	METAL	Cadmium, Total (XRF)	mg/kg	26		
SMP-06/SD01	7/19/2005	W1-024	METAL	Lead, Total (XRF)	mg/kg	256		
SMP-06/SD01	7/19/2005	W1-024	METAL	Zinc, Total (XRF)	mg/kg	2180		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Arsenic, Total (ICP)	mg/kg	27		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Arsenic, Total (ICP)	mg/kg	27		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Arsenic, Total (XRF)	mg/kg	22		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Arsenic, Total (XRF)	mg/kg	22		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Cadmium, Total (ICP)	mg/kg	27		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Cadmium, Total (ICP)	mg/kg	27		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Cadmium, Total (XRF)	mg/kg	22		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Cadmium, Total (XRF)	mg/kg	22		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Lead, Total (ICP)	mg/kg	321		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Lead, Total (ICP)	mg/kg	321		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Lead, Total (XRF)	mg/kg	318		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Lead, Total (XRF)	mg/kg	318		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Zinc, Total (ICP)	mg/kg	2400		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Zinc, Total (ICP)	mg/kg	2400		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Zinc, Total (XRF)	mg/kg	2480		
SMP-1000/SD01	7/19/2005	W1-028	METAL	Zinc, Total (XRF)	mg/kg	2480		
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Arsenic, TCLP	mg/L	0.078		
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Arsenic, TCLP	mg/L	0.078		
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SMP-1000/SD01	7/19/2005	W1-028	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
PZ-04/SS01	8/2/2005	W4-001	METAL	Arsenic, Total (XRF)	mg/kg	17		
PZ-04/SS01	8/2/2005	W4-001	METAL	Cadmium, Total (XRF)	mg/kg	10		
PZ-04/SS01	8/2/2005	W4-001	METAL	Lead, Total (XRF)	mg/kg	230		
PZ-04/SS01	8/2/2005	W4-001	METAL	Zinc, Total (XRF)	mg/kg	1190		
PZ-04/SS02	8/2/2005	W4-002	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-04/SS02	8/2/2005	W4-002	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-04/SS02	8/2/2005	W4-002	METAL	Lead, Total (XRF)	mg/kg	20	U	
PZ-04/SS02	8/2/2005	W4-002	METAL	Zinc, Total (XRF)	mg/kg	216		
PZ-04/SS03	8/2/2005	W4-003	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-04/SS03	8/2/2005	W4-003	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-04/SS03	8/2/2005	W4-003	METAL	Lead, Total (XRF)	mg/kg	20	U	
PZ-04/SS03	8/2/2005	W4-003	METAL	Zinc, Total (XRF)	mg/kg	57		
PZ-04/SS04	8/2/2005	W4-004	METAL	Arsenic, Total (ICP)	mg/kg	18		
PZ-04/SS04	8/2/2005	W4-004	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-04/SS04	8/2/2005	W4-004	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
PZ-04/SS04	8/2/2005	W4-004	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-04/SS04	8/2/2005	W4-004	METAL	Lead, Total (ICP)	mg/kg	40		
PZ-04/SS04	8/2/2005	W4-004	METAL	Lead, Total (XRF)	mg/kg	20	U	
PZ-04/SS04	8/2/2005	W4-004	METAL	Zinc, Total (ICP)	mg/kg	72		
PZ-04/SS04	8/2/2005	W4-004	METAL	Zinc, Total (XRF)	mg/kg	84		
PZ-04/SS04	8/2/2005	W4-004	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
PZ-04/SS04	8/2/2005	W4-004	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
PZ-04/SS04	8/2/2005	W4-004	TCLPMET	Lead, TCLP	mg/L	0.05	U	
PZ-04/SS05	8/2/2005	W4-005	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-04/SS05	8/2/2005	W4-005	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-04/SS05	8/2/2005	W4-005	METAL	Lead, Total (XRF)	mg/kg	20	U	
PZ-04/SS05	8/2/2005	W4-005	METAL	Zinc, Total (XRF)	mg/kg	170		
PZ-07/SS01	8/2/2005	W4-006	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
PZ-07/SS01	8/2/2005	W4-006	METAL	Cadmium, Total (XRF)	mg/kg	170		
PZ-07/SS01	8/2/2005	W4-006	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
PZ-07/SS01	8/2/2005	W4-006	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PZ-07/SS02	8/2/2005	W4-007	METAL	Arsenic, Total (XRF)	mg/kg	78		
PZ-07/SS02	8/2/2005	W4-007	METAL	Cadmium, Total (XRF)	mg/kg	54		
PZ-07/SS02	8/2/2005	W4-007	METAL	Lead, Total (XRF)	mg/kg	1320		
PZ-07/SS02	8/2/2005	W4-007	METAL	Zinc, Total (XRF)	mg/kg	2180		
PZ-07/SS03	8/2/2005	W4-008	METAL	Arsenic, Total (ICP)	mg/kg	18		
PZ-07/SS03	8/2/2005	W4-008	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-07/SS03	8/2/2005	W4-008	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
PZ-07/SS03	8/2/2005	W4-008	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-07/SS03	8/2/2005	W4-008	METAL	Lead, Total (ICP)	mg/kg	15		
PZ-07/SS03	8/2/2005	W4-008	METAL	Lead, Total (XRF)	mg/kg	20	U	
PZ-07/SS03	8/2/2005	W4-008	METAL	Zinc, Total (ICP)	mg/kg	343		
PZ-07/SS03	8/2/2005	W4-008	METAL	Zinc, Total (XRF)	mg/kg	402		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
PZ-07/SS03	8/2/2005	W4-008	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
PZ-07/SS03	8/2/2005	W4-008	TCLPMET	Cadmium, TCLP	mg/L	0.012		
PZ-07/SS03	8/2/2005	W4-008	TCLPMET	Lead, TCLP	mg/L	0.05	U	
PZ-07/SS04	8/2/2005	W4-009	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-07/SS04	8/2/2005	W4-009	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-07/SS04	8/2/2005	W4-009	METAL	Lead, Total (XRF)	mg/kg	33		
PZ-07/SS04	8/2/2005	W4-009	METAL	Zinc, Total (XRF)	mg/kg	197		
PZ-07/SS05	8/2/2005	W4-010	METAL	Arsenic, Total (XRF)	mg/kg	16		
PZ-07/SS05	8/2/2005	W4-010	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
PZ-07/SS05	8/2/2005	W4-010	METAL	Lead, Total (XRF)	mg/kg	215		
PZ-07/SS05	8/2/2005	W4-010	METAL	Zinc, Total (XRF)	mg/kg	851		
PZ-09/SS01	8/2/2005	W4-012	METAL	Arsenic, Total (XRF)	mg/kg	174		
PZ-09/SS01	8/2/2005	W4-012	METAL	Cadmium, Total (XRF)	mg/kg	128		
PZ-09/SS01	8/2/2005	W4-012	METAL	Lead, Total (XRF)	mg/kg	2630		
PZ-09/SS01	8/2/2005	W4-012	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PZ-09/SS02	8/2/2005	W4-013	METAL	Arsenic, Total (XRF)	mg/kg	251		
PZ-09/SS02	8/2/2005	W4-013	METAL	Cadmium, Total (XRF)	mg/kg	166		
PZ-09/SS02	8/2/2005	W4-013	METAL	Lead, Total (XRF)	mg/kg	3290		
PZ-09/SS02	8/2/2005	W4-013	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
PZ-09/SS04	8/2/2005	W4-014	METAL	Arsenic, Total (XRF)	mg/kg	30		
PZ-09/SS04	8/2/2005	W4-014	METAL	Cadmium, Total (XRF)	mg/kg	97		
PZ-09/SS04	8/2/2005	W4-014	METAL	Lead, Total (XRF)	mg/kg	387		
PZ-09/SS04	8/2/2005	W4-014	METAL	Zinc, Total (XRF)	mg/kg	5720		
PZ-1000/SS02	8/2/2005	W4-011	METAL	Arsenic, Total (XRF)	mg/kg	74		
PZ-1000/SS02	8/2/2005	W4-011	METAL	Cadmium, Total (XRF)	mg/kg	53		
PZ-1000/SS02	8/2/2005	W4-011	METAL	Lead, Total (XRF)	mg/kg	1340		
PZ-1000/SS02	8/2/2005	W4-011	METAL	Zinc, Total (XRF)	mg/kg	2510		
PZ-1002/SS04	8/2/2005	W4-015	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
PZ-1002/SS04	8/2/2005	W4-015	METAL	Cadmium, Total (XRF)	mg/kg	12		
PZ-1002/SS04	8/2/2005	W4-015	METAL	Lead, Total (XRF)	mg/kg	49		
PZ-1002/SS04	8/2/2005	W4-015	METAL	Zinc, Total (XRF)	mg/kg	472		
SP-01/SS01	7/28/2005	W3-020	METAL	Arsenic, Total (ICP)	mg/kg	11		
SP-01/SS01	7/28/2005	W3-020	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-01/SS01	7/28/2005	W3-020	METAL	Cadmium, Total (ICP)	mg/kg	3		
SP-01/SS01	7/28/2005	W3-020	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-01/SS01	7/28/2005	W3-020	METAL	Lead, Total (ICP)	mg/kg	72		
SP-01/SS01	7/28/2005	W3-020	METAL	Lead, Total (XRF)	mg/kg	81		
SP-01/SS01	7/28/2005	W3-020	METAL	Zinc, Total (ICP)	mg/kg	696		
SP-01/SS01	7/28/2005	W3-020	METAL	Zinc, Total (XRF)	mg/kg	815		
SP-01/SS01	7/28/2005	W3-020	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-01/SS01	7/28/2005	W3-020	TCLPMET	Cadmium, TCLP	mg/L	0.027		
SP-01/SS01	7/28/2005	W3-020	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-01/SS02	7/28/2005	W3-022	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-01/SS02	7/28/2005	W3-022	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-01/SS02	7/28/2005	W3-022	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-01/SS02	7/28/2005	W3-022	METAL	Zinc, Total (XRF)	mg/kg	225		
SP-01/SS03	7/28/2005	W3-023	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-01/SS03	7/28/2005	W3-023	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-01/SS03	7/28/2005	W3-023	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-01/SS03	7/28/2005	W3-023	METAL	Zinc, Total (XRF)	mg/kg	132		
SP-02/SS01	7/28/2005	W3-151	METAL	Arsenic, Total (XRF)	mg/kg	34		J*
SP-02/SS01	7/28/2005	W3-151	METAL	Cadmium, Total (XRF)	mg/kg	14		
SP-02/SS01	7/28/2005	W3-151	METAL	Lead, Total (XRF)	mg/kg	633		
SP-02/SS01	7/28/2005	W3-151	METAL	Zinc, Total (XRF)	mg/kg	1860		
SP-03/SS01	7/28/2005	W3-152	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-03/SS01	7/28/2005	W3-152	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-03/SS01	7/28/2005	W3-152	METAL	Lead, Total (XRF)	mg/kg	120		
SP-03/SS01	7/28/2005	W3-152	METAL	Zinc, Total (XRF)	mg/kg	983		
SP-03/SS02	7/28/2005	W3-153	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-03/SS02	7/28/2005	W3-153	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-03/SS02	7/28/2005	W3-153	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-03/SS02	7/28/2005	W3-153	METAL	Zinc, Total (XRF)	mg/kg	226		
SP-03/SS03	7/28/2005	W3-154	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-03/SS03	7/28/2005	W3-154	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-03/SS03	7/28/2005	W3-154	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-03/SS03	7/28/2005	W3-154	METAL	Zinc, Total (XRF)	mg/kg	133		
SP-04/SS01	7/28/2005	W3-155	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-04/SS01	7/28/2005	W3-155	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-04/SS01	7/28/2005	W3-155	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-04/SS01	7/28/2005	W3-155	METAL	Zinc, Total (XRF)	mg/kg	460		
SP-05/SS01	7/29/2005	W3-046	METAL	Arsenic, Total (ICP)	mg/kg	12		
SP-05/SS01	7/29/2005	W3-046	METAL	Arsenic, Total (XRF)	mg/kg	20		
SP-05/SS01	7/29/2005	W3-046	METAL	Cadmium, Total (ICP)	mg/kg	23		
SP-05/SS01	7/29/2005	W3-046	METAL	Cadmium, Total (XRF)	mg/kg	25		
SP-05/SS01	7/29/2005	W3-046	METAL	Lead, Total (ICP)	mg/kg	284		
SP-05/SS01	7/29/2005	W3-046	METAL	Lead, Total (XRF)	mg/kg	357		
SP-05/SS01	7/29/2005	W3-046	METAL	Zinc, Total (ICP)	mg/kg	1840		
SP-05/SS01	7/29/2005	W3-046	METAL	Zinc, Total (XRF)	mg/kg	2500		
SP-05/SS01	7/29/2005	W3-046	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-05/SS01	7/29/2005	W3-046	TCLPMET	Cadmium, TCLP	mg/L	0.129		
SP-05/SS01	7/29/2005	W3-046	TCLPMET	Lead, TCLP	mg/L	0.213		
SP-06/SS01	7/29/2005	W3-047	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-06/SS01	7/29/2005	W3-047	METAL	Cadmium, Total (XRF)	mg/kg	17		
SP-06/SS01	7/29/2005	W3-047	METAL	Lead, Total (XRF)	mg/kg	41		
SP-06/SS01	7/29/2005	W3-047	METAL	Zinc, Total (XRF)	mg/kg	1360		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-06/SS02	7/29/2005	W3-048	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-06/SS02	7/29/2005	W3-048	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-06/SS02	7/29/2005	W3-048	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-06/SS02	7/29/2005	W3-048	METAL	Zinc, Total (XRF)	mg/kg	224		
SP-06/SS03	7/29/2005	W3-049	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-06/SS03	7/29/2005	W3-049	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-06/SS03	7/29/2005	W3-049	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-06/SS03	7/29/2005	W3-049	METAL	Zinc, Total (XRF)	mg/kg	50	U	
SP-07/SS01	7/29/2005	W3-051	METAL	Arsenic, Total (XRF)	mg/kg	58		
SP-07/SS01	7/29/2005	W3-051	METAL	Cadmium, Total (XRF)	mg/kg	15		
SP-07/SS01	7/29/2005	W3-051	METAL	Lead, Total (XRF)	mg/kg	894		
SP-07/SS01	7/29/2005	W3-051	METAL	Zinc, Total (XRF)	mg/kg	1870		
SP-08/SS01	7/28/2005	W3-030	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-08/SS01	7/28/2005	W3-030	METAL	Cadmium, Total (XRF)	mg/kg	25		
SP-08/SS01	7/28/2005	W3-030	METAL	Lead, Total (XRF)	mg/kg	187		
SP-08/SS01	7/28/2005	W3-030	METAL	Zinc, Total (XRF)	mg/kg	2450		
SP-09/SS01	7/28/2005	W3-024	METAL	Arsenic, Total (XRF)	mg/kg	43		
SP-09/SS01	7/28/2005	W3-024	METAL	Cadmium, Total (XRF)	mg/kg	25		
SP-09/SS01	7/28/2005	W3-024	METAL	Lead, Total (XRF)	mg/kg	631		
SP-09/SS01	7/28/2005	W3-024	METAL	Zinc, Total (XRF)	mg/kg	3570		
SP-09/SS02	7/28/2005	W3-025	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-09/SS02	7/28/2005	W3-025	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-09/SS02	7/28/2005	W3-025	METAL	Lead, Total (XRF)	mg/kg	143		
SP-09/SS02	7/28/2005	W3-025	METAL	Zinc, Total (XRF)	mg/kg	846		
SP-09/SS03	7/28/2005	W3-026	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-09/SS03	7/28/2005	W3-026	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-09/SS03	7/28/2005	W3-026	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-09/SS03	7/28/2005	W3-026	METAL	Zinc, Total (XRF)	mg/kg	101		
SP-10/SS01	7/28/2005	W3-016	METAL	Arsenic, Total (XRF)	mg/kg	55		
SP-10/SS01	7/28/2005	W3-016	METAL	Cadmium, Total (XRF)	mg/kg	38		
SP-10/SS01	7/28/2005	W3-016	METAL	Lead, Total (XRF)	mg/kg	828		
SP-10/SS01	7/28/2005	W3-016	METAL	Zinc, Total (XRF)	mg/kg	3770		
SP-10/SS02	7/28/2005	W3-017	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-10/SS02	7/28/2005	W3-017	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-10/SS02	7/28/2005	W3-017	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-10/SS02	7/28/2005	W3-017	METAL	Zinc, Total (XRF)	mg/kg	487		
SP-10/SS03	7/28/2005	W3-018	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-10/SS03	7/28/2005	W3-018	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-10/SS03	7/28/2005	W3-018	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
SP-10/SS03	7/28/2005	W3-018	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-10/SS03	7/28/2005	W3-018	METAL	Lead, Total (ICP)	mg/kg	12		
SP-10/SS03	7/28/2005	W3-018	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-10/SS03	7/28/2005	W3-018	METAL	Zinc, Total (ICP)	mg/kg	49		
SP-10/SS03	7/28/2005	W3-018	METAL	Zinc, Total (XRF)	mg/kg	66		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-10/SS03	7/28/2005	W3-018	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-10/SS03	7/28/2005	W3-018	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SP-10/SS03	7/28/2005	W3-018	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-1000/SS01	7/28/2005	W3-021	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-1000/SS01	7/28/2005	W3-021	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1000/SS01	7/28/2005	W3-021	METAL	Cadmium, Total (ICP)	mg/kg	3		
SP-1000/SS01	7/28/2005	W3-021	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1000/SS01	7/28/2005	W3-021	METAL	Lead, Total (ICP)	mg/kg	83		
SP-1000/SS01	7/28/2005	W3-021	METAL	Lead, Total (XRF)	mg/kg	94		
SP-1000/SS01	7/28/2005	W3-021	METAL	Zinc, Total (ICP)	mg/kg	702		
SP-1000/SS01	7/28/2005	W3-021	METAL	Zinc, Total (XRF)	mg/kg	851		
SP-1000/SS01	7/28/2005	W3-021	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-1000/SS01	7/28/2005	W3-021	TCLPMET	Cadmium, TCLP	mg/L	0.023		
SP-1000/SS01	7/28/2005	W3-021	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-1001/SS02	7/29/2005	W3-050	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1001/SS02	7/29/2005	W3-050	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1001/SS02	7/29/2005	W3-050	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1001/SS02	7/29/2005	W3-050	METAL	Zinc, Total (XRF)	mg/kg	193		
SP-1002/SS01	7/28/2005	W3-015	METAL	Arsenic, Total (XRF)	mg/kg	41		
SP-1002/SS01	7/28/2005	W3-015	METAL	Cadmium, Total (XRF)	mg/kg	28		
SP-1002/SS01	7/28/2005	W3-015	METAL	Lead, Total (XRF)	mg/kg	626		
SP-1002/SS01	7/28/2005	W3-015	METAL	Zinc, Total (XRF)	mg/kg	2450		
SP-1003/SS03	7/29/2005	W3-095	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1003/SS03	7/29/2005	W3-095	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1003/SS03	7/29/2005	W3-095	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1003/SS03	7/29/2005	W3-095	METAL	Zinc, Total (XRF)	mg/kg	466		
SP-1004/SS01	7/29/2005	W3-082	METAL	Arsenic, Total (XRF)	mg/kg	35		
SP-1004/SS01	7/29/2005	W3-082	METAL	Cadmium, Total (XRF)	mg/kg	24		
SP-1004/SS01	7/29/2005	W3-082	METAL	Lead, Total (XRF)	mg/kg	533		
SP-1004/SS01	7/29/2005	W3-082	METAL	Zinc, Total (XRF)	mg/kg	3400		
SP-1005/SS02	7/29/2005	W3-058	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1005/SS02	7/29/2005	W3-058	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1005/SS02	7/29/2005	W3-058	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1005/SS02	7/29/2005	W3-058	METAL	Zinc, Total (XRF)	mg/kg	238		
SP-1006/SS02	7/29/2005	W3-071	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-1006/SS02	7/29/2005	W3-071	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1006/SS02	7/29/2005	W3-071	METAL	Cadmium, Total (ICP)	mg/kg	1		
SP-1006/SS02	7/29/2005	W3-071	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1006/SS02	7/29/2005	W3-071	METAL	Lead, Total (ICP)	mg/kg	11		
SP-1006/SS02	7/29/2005	W3-071	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1006/SS02	7/29/2005	W3-071	METAL	Zinc, Total (ICP)	mg/kg	239		
SP-1006/SS02	7/29/2005	W3-071	METAL	Zinc, Total (XRF)	mg/kg	318		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-1006/SS02	7/29/2005	W3-071	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	J*
SP-1006/SS02	7/29/2005	W3-071	TCLPMET	Cadmium, TCLP	mg/L	0.013		
SP-1006/SS02	7/29/2005	W3-071	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-1007/SS02	7/29/2005	W3-099	METAL	Arsenic, Total (XRF)	mg/kg	102		
SP-1007/SS02	7/29/2005	W3-099	METAL	Cadmium, Total (XRF)	mg/kg	56		
SP-1007/SS02	7/29/2005	W3-099	METAL	Lead, Total (XRF)	mg/kg	1690		
SP-1007/SS02	7/29/2005	W3-099	METAL	Zinc, Total (XRF)	mg/kg	6600		
SP-1008/SS03	8/1/2005	W3-103	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1008/SS03	8/1/2005	W3-103	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1008/SS03	8/1/2005	W3-103	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1008/SS03	8/1/2005	W3-103	METAL	Zinc, Total (XRF)	mg/kg	63		
SP-1009/SS02	8/1/2005	W3-126	METAL	Arsenic, Total (XRF)	mg/kg	11		
SP-1009/SS02	8/1/2005	W3-126	METAL	Cadmium, Total (XRF)	mg/kg	15		
SP-1009/SS02	8/1/2005	W3-126	METAL	Lead, Total (XRF)	mg/kg	173		
SP-1009/SS02	8/1/2005	W3-126	METAL	Zinc, Total (XRF)	mg/kg	1560		
SP-1010/SS03	7/29/2005	W3-078	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1010/SS03	7/29/2005	W3-078	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1010/SS03	7/29/2005	W3-078	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1010/SS03	7/29/2005	W3-078	METAL	Zinc, Total (XRF)	mg/kg	383		
SP-1011/SS01	8/1/2005	W3-140	METAL	Arsenic, Total (XRF)	mg/kg	129		
SP-1011/SS01	8/1/2005	W3-140	METAL	Cadmium, Total (XRF)	mg/kg	158		
SP-1011/SS01	8/1/2005	W3-140	METAL	Lead, Total (XRF)	mg/kg	1940		
SP-1011/SS01	8/1/2005	W3-140	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-1012/SS02	8/1/2005	W3-148	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1012/SS02	8/1/2005	W3-148	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1012/SS02	8/1/2005	W3-148	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1012/SS02	8/1/2005	W3-148	METAL	Zinc, Total (XRF)	mg/kg	71		
SP-1013/SS03	7/28/2005	W3-013	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1013/SS03	7/28/2005	W3-013	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1013/SS03	7/28/2005	W3-013	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1013/SS03	7/28/2005	W3-013	METAL	Zinc, Total (XRF)	mg/kg	70		
SP-1014/SS01	8/1/2005	W3-171	METAL	Arsenic, Total (ICP)	mg/kg	16		U
SP-1014/SS01	8/1/2005	W3-171	METAL	Arsenic, Total (XRF)	mg/kg	44		
SP-1014/SS01	8/1/2005	W3-171	METAL	Cadmium, Total (ICP)	mg/kg	65		
SP-1014/SS01	8/1/2005	W3-171	METAL	Cadmium, Total (XRF)	mg/kg	89		
SP-1014/SS01	8/1/2005	W3-171	METAL	Lead, Total (ICP)	mg/kg	568		
SP-1014/SS01	8/1/2005	W3-171	METAL	Lead, Total (XRF)	mg/kg	789		
SP-1014/SS01	8/1/2005	W3-171	METAL	Zinc, Total (ICP)	mg/kg	1810		
SP-1014/SS01	8/1/2005	W3-171	METAL	Zinc, Total (XRF)	mg/kg	2290		
SP-1014/SS01	8/1/2005	W3-171	TCLPMET	Arsenic, TCLP	mg/L	0.05		
SP-1014/SS01	8/1/2005	W3-171	TCLPMET	Cadmium, TCLP	mg/L	0.719		
SP-1014/SS01	8/1/2005	W3-171	TCLPMET	Lead, TCLP	mg/L	0.221		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-11/SS01	7/28/2005	W3-109	METAL	Arsenic, Total (XRF)	mg/kg	43		
SP-11/SS01	7/28/2005	W3-109	METAL	Cadmium, Total (XRF)	mg/kg	23		
SP-11/SS01	7/28/2005	W3-109	METAL	Lead, Total (XRF)	mg/kg	697		
SP-11/SS01	7/28/2005	W3-109	METAL	Zinc, Total (XRF)	mg/kg	2500		
SP-11/SS02	7/28/2005	W3-110	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-11/SS02	7/28/2005	W3-110	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-11/SS02	7/28/2005	W3-110	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-11/SS02	7/28/2005	W3-110	METAL	Zinc, Total (XRF)	mg/kg	738		
SP-11/SS03	7/28/2005	W3-111	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-11/SS03	7/28/2005	W3-111	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-11/SS03	7/28/2005	W3-111	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-11/SS03	7/28/2005	W3-111	METAL	Zinc, Total (XRF)	mg/kg	50	U	
SP-12/SS01	7/28/2005	W3-014	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-12/SS01	7/28/2005	W3-014	METAL	Cadmium, Total (XRF)	mg/kg	12		
SP-12/SS01	7/28/2005	W3-014	METAL	Lead, Total (XRF)	mg/kg	42		
SP-12/SS01	7/28/2005	W3-014	METAL	Zinc, Total (XRF)	mg/kg	1230		
SP-13/SS01	7/28/2005	W3-027	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-13/SS01	7/28/2005	W3-027	METAL	Cadmium, Total (XRF)	mg/kg	16		
SP-13/SS01	7/28/2005	W3-027	METAL	Lead, Total (XRF)	mg/kg	36		
SP-13/SS01	7/28/2005	W3-027	METAL	Zinc, Total (XRF)	mg/kg	1120		
SP-13/SS02	7/28/2005	W3-028	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-13/SS02	7/28/2005	W3-028	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-13/SS02	7/28/2005	W3-028	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-13/SS02	7/28/2005	W3-028	METAL	Zinc, Total (XRF)	mg/kg	62		
SP-13/SS03	7/28/2005	W3-029	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-13/SS03	7/28/2005	W3-029	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-13/SS03	7/28/2005	W3-029	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-13/SS03	7/28/2005	W3-029	METAL	Zinc, Total (XRF)	mg/kg	61		
SP-14/SS01	7/28/2005	W3-019	METAL	Arsenic, Total (XRF)	mg/kg	14		
SP-14/SS01	7/28/2005	W3-019	METAL	Cadmium, Total (XRF)	mg/kg	13		
SP-14/SS01	7/28/2005	W3-019	METAL	Lead, Total (XRF)	mg/kg	246		
SP-14/SS01	7/28/2005	W3-019	METAL	Zinc, Total (XRF)	mg/kg	1570		
SP-15/SS01	7/28/2005	W3-156	METAL	Arsenic, Total (XRF)	mg/kg	39		J*
SP-15/SS01	7/28/2005	W3-156	METAL	Cadmium, Total (XRF)	mg/kg	42		
SP-15/SS01	7/28/2005	W3-156	METAL	Lead, Total (XRF)	mg/kg	638		
SP-15/SS01	7/28/2005	W3-156	METAL	Zinc, Total (XRF)	mg/kg	3730		
SP-16/SS01	7/29/2005	W3-092	METAL	Arsenic, Total (XRF)	mg/kg	204		
SP-16/SS01	7/29/2005	W3-092	METAL	Cadmium, Total (XRF)	mg/kg	48		
SP-16/SS01	7/29/2005	W3-092	METAL	Lead, Total (XRF)	mg/kg	3060		
SP-16/SS01	7/29/2005	W3-092	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-16/SS02	7/29/2005	W3-093	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-16/SS02	7/29/2005	W3-093	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-16/SS02	7/29/2005	W3-093	METAL	Lead, Total (XRF)	mg/kg	114		
SP-16/SS02	7/29/2005	W3-093	METAL	Zinc, Total (XRF)	mg/kg	364		
SP-16/SS03	7/29/2005	W3-094	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-16/SS03	7/29/2005	W3-094	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-16/SS03	7/29/2005	W3-094	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-16/SS03	7/29/2005	W3-094	METAL	Zinc, Total (XRF)	mg/kg	317		
SP-17/SS01	7/29/2005	W3-089	METAL	Arsenic, Total (XRF)	mg/kg	45		
SP-17/SS01	7/29/2005	W3-089	METAL	Cadmium, Total (XRF)	mg/kg	41		
SP-17/SS01	7/29/2005	W3-089	METAL	Lead, Total (XRF)	mg/kg	845		
SP-17/SS01	7/29/2005	W3-089	METAL	Zinc, Total (XRF)	mg/kg	4900		
SP-17/SS02	7/29/2005	W3-090	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-17/SS02	7/29/2005	W3-090	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-17/SS02	7/29/2005	W3-090	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-17/SS02	7/29/2005	W3-090	METAL	Zinc, Total (XRF)	mg/kg	146		
SP-17/SS03	7/29/2005	W3-091	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-17/SS03	7/29/2005	W3-091	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-17/SS03	7/29/2005	W3-091	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-17/SS03	7/29/2005	W3-091	METAL	Zinc, Total (XRF)	mg/kg	84		
SP-18/SS01	7/29/2005	W3-086	METAL	Arsenic, Total (XRF)	mg/kg	112		
SP-18/SS01	7/29/2005	W3-086	METAL	Cadmium, Total (XRF)	mg/kg	77		
SP-18/SS01	7/29/2005	W3-086	METAL	Lead, Total (XRF)	mg/kg	1810		
SP-18/SS01	7/29/2005	W3-086	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-18/SS02	7/29/2005	W3-087	METAL	Arsenic, Total (XRF)	mg/kg	21		
SP-18/SS02	7/29/2005	W3-087	METAL	Cadmium, Total (XRF)	mg/kg	29		
SP-18/SS02	7/29/2005	W3-087	METAL	Lead, Total (XRF)	mg/kg	395		
SP-18/SS02	7/29/2005	W3-087	METAL	Zinc, Total (XRF)	mg/kg	3340		
SP-18/SS03	7/29/2005	W3-088	METAL	Arsenic, Total (ICP)	mg/kg	10		
SP-18/SS03	7/29/2005	W3-088	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-18/SS03	7/29/2005	W3-088	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
SP-18/SS03	7/29/2005	W3-088	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-18/SS03	7/29/2005	W3-088	METAL	Lead, Total (ICP)	mg/kg	25		
SP-18/SS03	7/29/2005	W3-088	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-18/SS03	7/29/2005	W3-088	METAL	Zinc, Total (ICP)	mg/kg	51		
SP-18/SS03	7/29/2005	W3-088	METAL	Zinc, Total (XRF)	mg/kg	59		
SP-18/SS03	7/29/2005	W3-088	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-18/SS03	7/29/2005	W3-088	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SP-18/SS03	7/29/2005	W3-088	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-19/SS01	7/29/2005	W3-079	METAL	Arsenic, Total (XRF)	mg/kg	43		
SP-19/SS01	7/29/2005	W3-079	METAL	Cadmium, Total (XRF)	mg/kg	25		
SP-19/SS01	7/29/2005	W3-079	METAL	Lead, Total (XRF)	mg/kg	702		
SP-19/SS01	7/29/2005	W3-079	METAL	Zinc, Total (XRF)	mg/kg	3920		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-19/SS02	7/29/2005	W3-080	METAL	Arsenic, Total (XRF)	mg/kg	95		
SP-19/SS02	7/29/2005	W3-080	METAL	Cadmium, Total (XRF)	mg/kg	59		
SP-19/SS02	7/29/2005	W3-080	METAL	Lead, Total (XRF)	mg/kg	1550		
SP-19/SS02	7/29/2005	W3-080	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-19/SS03	7/29/2005	W3-081	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-19/SS03	7/29/2005	W3-081	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-19/SS03	7/29/2005	W3-081	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-19/SS03	7/29/2005	W3-081	METAL	Zinc, Total (XRF)	mg/kg	83		
SP-20/SS01	7/29/2005	W3-062	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-20/SS01	7/29/2005	W3-062	METAL	Cadmium, Total (XRF)	mg/kg	14		
SP-20/SS01	7/29/2005	W3-062	METAL	Lead, Total (XRF)	mg/kg	48		
SP-20/SS01	7/29/2005	W3-062	METAL	Zinc, Total (XRF)	mg/kg	864		
SP-20/SS02	7/29/2005	W3-063	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-20/SS02	7/29/2005	W3-063	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-20/SS02	7/29/2005	W3-063	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-20/SS02	7/29/2005	W3-063	METAL	Zinc, Total (XRF)	mg/kg	257		
SP-20/SS03	7/29/2005	W3-064	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-20/SS03	7/29/2005	W3-064	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-20/SS03	7/29/2005	W3-064	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-20/SS03	7/29/2005	W3-064	METAL	Zinc, Total (XRF)	mg/kg	50	U	
SP-21/SS01	7/29/2005	W3-059	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-21/SS01	7/29/2005	W3-059	METAL	Cadmium, Total (XRF)	mg/kg	25		
SP-21/SS01	7/29/2005	W3-059	METAL	Lead, Total (XRF)	mg/kg	113		
SP-21/SS01	7/29/2005	W3-059	METAL	Zinc, Total (XRF)	mg/kg	1780		
SP-21/SS02	7/29/2005	W3-060	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-21/SS02	7/29/2005	W3-060	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-21/SS02	7/29/2005	W3-060	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-21/SS02	7/29/2005	W3-060	METAL	Zinc, Total (XRF)	mg/kg	61		
SP-21/SS03	7/29/2005	W3-061	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-21/SS03	7/29/2005	W3-061	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-21/SS03	7/29/2005	W3-061	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-21/SS03	7/29/2005	W3-061	METAL	Zinc, Total (XRF)	mg/kg	75		
SP-22/SS01	7/29/2005	W3-055	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-22/SS01	7/29/2005	W3-055	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-22/SS01	7/29/2005	W3-055	METAL	Cadmium, Total (ICP)	mg/kg	12		
SP-22/SS01	7/29/2005	W3-055	METAL	Cadmium, Total (XRF)	mg/kg	15		
SP-22/SS01	7/29/2005	W3-055	METAL	Lead, Total (ICP)	mg/kg	81		
SP-22/SS01	7/29/2005	W3-055	METAL	Lead, Total (XRF)	mg/kg	94		
SP-22/SS01	7/29/2005	W3-055	METAL	Zinc, Total (ICP)	mg/kg	1210		
SP-22/SS01	7/29/2005	W3-055	METAL	Zinc, Total (XRF)	mg/kg	1550		
SP-22/SS01	7/29/2005	W3-055	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-22/SS01	7/29/2005	W3-055	TCLPMET	Cadmium, TCLP	mg/L	0.16		
SP-22/SS01	7/29/2005	W3-055	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-22/SS02	7/29/2005	W3-056	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-22/SS02	7/29/2005	W3-056	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-22/SS02	7/29/2005	W3-056	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-22/SS02	7/29/2005	W3-056	METAL	Zinc, Total (XRF)	mg/kg	377		
SP-22/SS03	7/29/2005	W3-057	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-22/SS03	7/29/2005	W3-057	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-22/SS03	7/29/2005	W3-057	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-22/SS03	7/29/2005	W3-057	METAL	Zinc, Total (XRF)	mg/kg	65		
SP-23/SS01	7/29/2005	W3-052	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-23/SS01	7/29/2005	W3-052	METAL	Cadmium, Total (XRF)	mg/kg	32		
SP-23/SS01	7/29/2005	W3-052	METAL	Lead, Total (XRF)	mg/kg	158		
SP-23/SS01	7/29/2005	W3-052	METAL	Zinc, Total (XRF)	mg/kg	2160		
SP-23/SS02	7/29/2005	W3-053	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-23/SS02	7/29/2005	W3-053	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-23/SS02	7/29/2005	W3-053	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-23/SS02	7/29/2005	W3-053	METAL	Zinc, Total (XRF)	mg/kg	565		
SP-23/SS03	7/29/2005	W3-054	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-23/SS03	7/29/2005	W3-054	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-23/SS03	7/29/2005	W3-054	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-23/SS03	7/29/2005	W3-054	METAL	Zinc, Total (XRF)	mg/kg	96		
SP-24/SS01	7/29/2005	W3-072	METAL	Arsenic, Total (XRF)	mg/kg	49		
SP-24/SS01	7/29/2005	W3-072	METAL	Cadmium, Total (XRF)	mg/kg	13		
SP-24/SS01	7/29/2005	W3-072	METAL	Lead, Total (XRF)	mg/kg	708		
SP-24/SS01	7/29/2005	W3-072	METAL	Zinc, Total (XRF)	mg/kg	1370		
SP-24/SS02	7/29/2005	W3-073	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-24/SS02	7/29/2005	W3-073	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-24/SS02	7/29/2005	W3-073	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-24/SS02	7/29/2005	W3-073	METAL	Zinc, Total (XRF)	mg/kg	126		
SP-24/SS03	7/29/2005	W3-074	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-24/SS03	7/29/2005	W3-074	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-24/SS03	7/29/2005	W3-074	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-24/SS03	7/29/2005	W3-074	METAL	Zinc, Total (XRF)	mg/kg	62		
SP-25/SS01	7/29/2005	W3-068	METAL	Arsenic, Total (XRF)	mg/kg	51		
SP-25/SS01	7/29/2005	W3-068	METAL	Cadmium, Total (XRF)	mg/kg	34		
SP-25/SS01	7/29/2005	W3-068	METAL	Lead, Total (XRF)	mg/kg	925		
SP-25/SS01	7/29/2005	W3-068	METAL	Zinc, Total (XRF)	mg/kg	3520		
SP-25/SS02	7/29/2005	W3-069	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-25/SS02	7/29/2005	W3-069	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-25/SS02	7/29/2005	W3-069	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
SP-25/SS02	7/29/2005	W3-069	METAL	Cadmium, Total (XRF)	mg/kg	10	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-25/SS02	7/29/2005	W3-069	METAL	Lead, Total (ICP)	mg/kg	17		
SP-25/SS02	7/29/2005	W3-069	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-25/SS02	7/29/2005	W3-069	METAL	Zinc, Total (ICP)	mg/kg	83		
SP-25/SS02	7/29/2005	W3-069	METAL	Zinc, Total (XRF)	mg/kg	112		
SP-25/SS02	7/29/2005	W3-069	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-25/SS02	7/29/2005	W3-069	TCLPMET	Cadmium, TCLP	mg/L	0.025		
SP-25/SS02	7/29/2005	W3-069	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-25/SS03	7/29/2005	W3-070	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-25/SS03	7/29/2005	W3-070	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-25/SS03	7/29/2005	W3-070	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-25/SS03	7/29/2005	W3-070	METAL	Zinc, Total (XRF)	mg/kg	64		
SP-26/SS01	7/29/2005	W3-065	METAL	Arsenic, Total (XRF)	mg/kg	58		
SP-26/SS01	7/29/2005	W3-065	METAL	Cadmium, Total (XRF)	mg/kg	46		
SP-26/SS01	7/29/2005	W3-065	METAL	Lead, Total (XRF)	mg/kg	930		
SP-26/SS01	7/29/2005	W3-065	METAL	Zinc, Total (XRF)	mg/kg	4780		
SP-26/SS02	7/29/2005	W3-066	METAL	Arsenic, Total (XRF)	mg/kg	76		J*
SP-26/SS02	7/29/2005	W3-066	METAL	Cadmium, Total (XRF)	mg/kg	55		
SP-26/SS02	7/29/2005	W3-066	METAL	Lead, Total (XRF)	mg/kg	1250		J*
SP-26/SS02	7/29/2005	W3-066	METAL	Zinc, Total (XRF)	mg/kg	5470		
SP-26/SS03	7/29/2005	W3-067	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-26/SS03	7/29/2005	W3-067	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-26/SS03	7/29/2005	W3-067	METAL	Lead, Total (XRF)	mg/kg	208		
SP-26/SS03	7/29/2005	W3-067	METAL	Zinc, Total (XRF)	mg/kg	1270		
SP-27/SS01	7/29/2005	W3-083	METAL	Arsenic, Total (XRF)	mg/kg	117		
SP-27/SS01	7/29/2005	W3-083	METAL	Cadmium, Total (XRF)	mg/kg	109		
SP-27/SS01	7/29/2005	W3-083	METAL	Lead, Total (XRF)	mg/kg	2050		
SP-27/SS01	7/29/2005	W3-083	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-27/SS02	7/29/2005	W3-084	METAL	Arsenic, Total (XRF)	mg/kg	441		
SP-27/SS02	7/29/2005	W3-084	METAL	Cadmium, Total (XRF)	mg/kg	290		
SP-27/SS02	7/29/2005	W3-084	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
SP-27/SS02	7/29/2005	W3-084	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-27/SS03	7/29/2005	W3-085	METAL	Arsenic, Total (XRF)	mg/kg	281		
SP-27/SS03	7/29/2005	W3-085	METAL	Cadmium, Total (XRF)	mg/kg	147		
SP-27/SS03	7/29/2005	W3-085	METAL	Lead, Total (XRF)	mg/kg	2910		
SP-27/SS03	7/29/2005	W3-085	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-28/SS01	8/1/2005	W3-121	METAL	Arsenic, Total (XRF)	mg/kg	25		
SP-28/SS01	8/1/2005	W3-121	METAL	Cadmium, Total (XRF)	mg/kg	17		
SP-28/SS01	8/1/2005	W3-121	METAL	Lead, Total (XRF)	mg/kg	438		
SP-28/SS01	8/1/2005	W3-121	METAL	Zinc, Total (XRF)	mg/kg	2160		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-28/SS02	8/1/2005	W3-122	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-28/SS02	8/1/2005	W3-122	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-28/SS02	8/1/2005	W3-122	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-28/SS02	8/1/2005	W3-122	METAL	Zinc, Total (XRF)	mg/kg	245		
SP-28/SS03	8/1/2005	W3-123	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-28/SS03	8/1/2005	W3-123	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-28/SS03	8/1/2005	W3-123	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-28/SS03	8/1/2005	W3-123	METAL	Zinc, Total (XRF)	mg/kg	54		
SP-29/SS01	7/29/2005	W3-096	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
SP-29/SS01	7/29/2005	W3-096	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-29/SS01	7/29/2005	W3-096	METAL	Cadmium, Total (ICP)	mg/kg	3		
SP-29/SS01	7/29/2005	W3-096	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-29/SS01	7/29/2005	W3-096	METAL	Lead, Total (ICP)	mg/kg	26		
SP-29/SS01	7/29/2005	W3-096	METAL	Lead, Total (XRF)	mg/kg	21		
SP-29/SS01	7/29/2005	W3-096	METAL	Zinc, Total (ICP)	mg/kg	473		
SP-29/SS01	7/29/2005	W3-096	METAL	Zinc, Total (XRF)	mg/kg	653		
SP-29/SS01	7/29/2005	W3-096	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-29/SS01	7/29/2005	W3-096	TCLPMET	Cadmium, TCLP	mg/L	0.393		
SP-29/SS01	7/29/2005	W3-096	TCLPMET	Lead, TCLP	mg/L	0.481		
SP-29/SS02	7/29/2005	W3-097	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-29/SS02	7/29/2005	W3-097	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-29/SS02	7/29/2005	W3-097	METAL	Lead, Total (XRF)	mg/kg	60		
SP-29/SS02	7/29/2005	W3-097	METAL	Zinc, Total (XRF)	mg/kg	773		
SP-29/SS03	7/29/2005	W3-098	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-29/SS03	7/29/2005	W3-098	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-29/SS03	7/29/2005	W3-098	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-29/SS03	7/29/2005	W3-098	METAL	Zinc, Total (XRF)	mg/kg	50	U	
SP-30/SS01	8/1/2005	W3-112	METAL	Arsenic, Total (XRF)	mg/kg	410		
SP-30/SS01	8/1/2005	W3-112	METAL	Cadmium, Total (XRF)	mg/kg	346		
SP-30/SS01	8/1/2005	W3-112	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
SP-30/SS01	8/1/2005	W3-112	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-30/SS02	8/1/2005	W3-113	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-30/SS02	8/1/2005	W3-113	METAL	Cadmium, Total (XRF)	mg/kg	13		
SP-30/SS02	8/1/2005	W3-113	METAL	Lead, Total (XRF)	mg/kg	77		
SP-30/SS02	8/1/2005	W3-113	METAL	Zinc, Total (XRF)	mg/kg	1620		
SP-30/SS03	8/1/2005	W3-114	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-30/SS03	8/1/2005	W3-114	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-30/SS03	8/1/2005	W3-114	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-30/SS03	8/1/2005	W3-114	METAL	Zinc, Total (XRF)	mg/kg	70		
SP-31/SS01	8/1/2005	W3-115	METAL	Arsenic, Total (XRF)	mg/kg	22		
SP-31/SS01	8/1/2005	W3-115	METAL	Cadmium, Total (XRF)	mg/kg	33		
SP-31/SS01	8/1/2005	W3-115	METAL	Lead, Total (XRF)	mg/kg	381		
SP-31/SS01	8/1/2005	W3-115	METAL	Zinc, Total (XRF)	mg/kg	4470		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-31/SS02	8/1/2005	W3-116	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-31/SS02	8/1/2005	W3-116	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-31/SS02	8/1/2005	W3-116	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-31/SS02	8/1/2005	W3-116	METAL	Zinc, Total (XRF)	mg/kg	475		
SP-31/SS03	8/1/2005	W3-117	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-31/SS03	8/1/2005	W3-117	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-31/SS03	8/1/2005	W3-117	METAL	Lead, Total (XRF)	mg/kg	24		
SP-31/SS03	8/1/2005	W3-117	METAL	Zinc, Total (XRF)	mg/kg	51		
SP-32/SS01	8/1/2005	W3-100	METAL	Arsenic, Total (XRF)	mg/kg	57		
SP-32/SS01	8/1/2005	W3-100	METAL	Cadmium, Total (XRF)	mg/kg	130		
SP-32/SS01	8/1/2005	W3-100	METAL	Lead, Total (XRF)	mg/kg	992		
SP-32/SS01	8/1/2005	W3-100	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-32/SS02	8/1/2005	W3-101	METAL	Arsenic, Total (ICP)	mg/kg	12		
SP-32/SS02	8/1/2005	W3-101	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-32/SS02	8/1/2005	W3-101	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
SP-32/SS02	8/1/2005	W3-101	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-32/SS02	8/1/2005	W3-101	METAL	Lead, Total (ICP)	mg/kg	23		
SP-32/SS02	8/1/2005	W3-101	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-32/SS02	8/1/2005	W3-101	METAL	Zinc, Total (ICP)	mg/kg	86		
SP-32/SS02	8/1/2005	W3-101	METAL	Zinc, Total (XRF)	mg/kg	109		
SP-32/SS02	8/1/2005	W3-101	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-32/SS02	8/1/2005	W3-101	TCLPMET	Cadmium, TCLP	mg/L	0.011		
SP-32/SS02	8/1/2005	W3-101	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-32/SS03	8/1/2005	W3-102	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-32/SS03	8/1/2005	W3-102	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-32/SS03	8/1/2005	W3-102	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-32/SS03	8/1/2005	W3-102	METAL	Zinc, Total (XRF)	mg/kg	64		
SP-33/SS01	8/1/2005	W3-157	METAL	Arsenic, Total (XRF)	mg/kg	13		J*
SP-33/SS01	8/1/2005	W3-157	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-33/SS01	8/1/2005	W3-157	METAL	Lead, Total (XRF)	mg/kg	211		
SP-33/SS01	8/1/2005	W3-157	METAL	Zinc, Total (XRF)	mg/kg	888		
SP-33/SS02	8/1/2005	W3-158	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-33/SS02	8/1/2005	W3-158	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-33/SS02	8/1/2005	W3-158	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-33/SS02	8/1/2005	W3-158	METAL	Zinc, Total (XRF)	mg/kg	57		
SP-33/SS03	8/1/2005	W3-159	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-33/SS03	8/1/2005	W3-159	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-33/SS03	8/1/2005	W3-159	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-33/SS03	8/1/2005	W3-159	METAL	Zinc, Total (XRF)	mg/kg	41		
SP-34/SS01	8/1/2005	W3-131	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-34/SS01	8/1/2005	W3-131	METAL	Cadmium, Total (XRF)	mg/kg	19		
SP-34/SS01	8/1/2005	W3-131	METAL	Lead, Total (XRF)	mg/kg	24		
SP-34/SS01	8/1/2005	W3-131	METAL	Zinc, Total (XRF)	mg/kg	2140		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-34/SS02	8/1/2005	W3-132	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-34/SS02	8/1/2005	W3-132	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-34/SS02	8/1/2005	W3-132	METAL	Lead, Total (XRF)	mg/kg	23		
SP-34/SS02	8/1/2005	W3-132	METAL	Zinc, Total (XRF)	mg/kg	185		
SP-34/SS03	8/1/2005	W3-133	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-34/SS03	8/1/2005	W3-133	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-34/SS03	8/1/2005	W3-133	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-34/SS03	8/1/2005	W3-133	METAL	Zinc, Total (XRF)	mg/kg	61		
SP-35/SS01	8/1/2005	W3-128	METAL	Arsenic, Total (XRF)	mg/kg	53		
SP-35/SS01	8/1/2005	W3-128	METAL	Cadmium, Total (XRF)	mg/kg	160		
SP-35/SS01	8/1/2005	W3-128	METAL	Lead, Total (XRF)	mg/kg	666		
SP-35/SS01	8/1/2005	W3-128	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-35/SS02	8/1/2005	W3-129	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-35/SS02	8/1/2005	W3-129	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-35/SS02	8/1/2005	W3-129	METAL	Lead, Total (XRF)	mg/kg	61		
SP-35/SS02	8/1/2005	W3-129	METAL	Zinc, Total (XRF)	mg/kg	476		
SP-35/SS03	8/1/2005	W3-130	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-35/SS03	8/1/2005	W3-130	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-35/SS03	8/1/2005	W3-130	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-35/SS03	8/1/2005	W3-130	METAL	Zinc, Total (XRF)	mg/kg	246		
SP-36/SS01	8/1/2005	W3-124	METAL	Arsenic, Total (ICP)	mg/kg	33		
SP-36/SS01	8/1/2005	W3-124	METAL	Arsenic, Total (XRF)	mg/kg	87		
SP-36/SS01	8/1/2005	W3-124	METAL	Cadmium, Total (ICP)	mg/kg	40		
SP-36/SS01	8/1/2005	W3-124	METAL	Cadmium, Total (XRF)	mg/kg	60		
SP-36/SS01	8/1/2005	W3-124	METAL	Lead, Total (ICP)	mg/kg	1140		
SP-36/SS01	8/1/2005	W3-124	METAL	Lead, Total (XRF)	mg/kg	1510		
SP-36/SS01	8/1/2005	W3-124	METAL	Zinc, Total (ICP)	mg/kg	8920		
SP-36/SS01	8/1/2005	W3-124	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-36/SS01	8/1/2005	W3-124	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-36/SS01	8/1/2005	W3-124	TCLPMET	Cadmium, TCLP	mg/L	1.69		
SP-36/SS01	8/1/2005	W3-124	TCLPMET	Lead, TCLP	mg/L	3.93		
SP-36/SS02	8/1/2005	W3-125	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-36/SS02	8/1/2005	W3-125	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-36/SS02	8/1/2005	W3-125	METAL	Lead, Total (XRF)	mg/kg	138		
SP-36/SS02	8/1/2005	W3-125	METAL	Zinc, Total (XRF)	mg/kg	1190		
SP-36/SS03	8/1/2005	W3-127	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-36/SS03	8/1/2005	W3-127	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-36/SS03	8/1/2005	W3-127	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-36/SS03	8/1/2005	W3-127	METAL	Zinc, Total (XRF)	mg/kg	79		
SP-37/SS01	8/1/2005	W3-118	METAL	Arsenic, Total (XRF)	mg/kg	166		
SP-37/SS01	8/1/2005	W3-118	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-37/SS01	8/1/2005	W3-118	METAL	Lead, Total (XRF)	mg/kg	2020		
SP-37/SS01	8/1/2005	W3-118	METAL	Zinc, Total (XRF)	mg/kg	2450		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-37/SS02	8/1/2005	W3-119	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-37/SS02	8/1/2005	W3-119	METAL	Cadmium, Total (XRF)	mg/kg	21		
SP-37/SS02	8/1/2005	W3-119	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-37/SS02	8/1/2005	W3-119	METAL	Zinc, Total (XRF)	mg/kg	911		
SP-37/SS03	8/1/2005	W3-120	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-37/SS03	8/1/2005	W3-120	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-37/SS03	8/1/2005	W3-120	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-37/SS03	8/1/2005	W3-120	METAL	Zinc, Total (XRF)	mg/kg	69		
SP-38/SS01	8/1/2005	W3-104	METAL	Arsenic, Total (XRF)	mg/kg	276		
SP-38/SS01	8/1/2005	W3-104	METAL	Cadmium, Total (XRF)	mg/kg	64		
SP-38/SS01	8/1/2005	W3-104	METAL	Lead, Total (XRF)	mg/kg	3950		
SP-38/SS01	8/1/2005	W3-104	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-38/SS02	8/1/2005	W3-105	METAL	Arsenic, Total (XRF)	mg/kg	13		
SP-38/SS02	8/1/2005	W3-105	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-38/SS02	8/1/2005	W3-105	METAL	Lead, Total (XRF)	mg/kg	181		
SP-38/SS02	8/1/2005	W3-105	METAL	Zinc, Total (XRF)	mg/kg	951		
SP-38/SS03	8/1/2005	W3-134	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-38/SS03	8/1/2005	W3-134	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-38/SS03	8/1/2005	W3-134	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-38/SS03	8/1/2005	W3-134	METAL	Zinc, Total (XRF)	mg/kg	74		
SP-39/SS01	7/29/2005	W3-075	METAL	Arsenic, Total (XRF)	mg/kg	199		
SP-39/SS01	7/29/2005	W3-075	METAL	Cadmium, Total (XRF)	mg/kg	51		
SP-39/SS01	7/29/2005	W3-075	METAL	Lead, Total (XRF)	mg/kg	3230		
SP-39/SS01	7/29/2005	W3-075	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-39/SS02	7/29/2005	W3-076	METAL	Arsenic, Total (ICP)	mg/kg	45		
SP-39/SS02	7/29/2005	W3-076	METAL	Arsenic, Total (XRF)	mg/kg	86		
SP-39/SS02	7/29/2005	W3-076	METAL	Cadmium, Total (ICP)	mg/kg	65		
SP-39/SS02	7/29/2005	W3-076	METAL	Cadmium, Total (XRF)	mg/kg	99		
SP-39/SS02	7/29/2005	W3-076	METAL	Lead, Total (ICP)	mg/kg	1170		
SP-39/SS02	7/29/2005	W3-076	METAL	Lead, Total (XRF)	mg/kg	1360		
SP-39/SS02	7/29/2005	W3-076	METAL	Zinc, Total (ICP)	mg/kg	11400		
SP-39/SS02	7/29/2005	W3-076	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-39/SS02	7/29/2005	W3-076	TCLPMET	Arsenic, TCLP	mg/L	0.058		
SP-39/SS02	7/29/2005	W3-076	TCLPMET	Cadmium, TCLP	mg/L	1.64		
SP-39/SS02	7/29/2005	W3-076	TCLPMET	Lead, TCLP	mg/L	18.5		
SP-39/SS03	7/29/2005	W3-077	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-39/SS03	7/29/2005	W3-077	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-39/SS03	7/29/2005	W3-077	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-39/SS03	7/29/2005	W3-077	METAL	Zinc, Total (XRF)	mg/kg	246		
SP-40/SS01	7/28/2005	W3-004	METAL	Arsenic, Total (XRF)	mg/kg	406		
SP-40/SS01	7/28/2005	W3-004	METAL	Cadmium, Total (XRF)	mg/kg	243		
SP-40/SS01	7/28/2005	W3-004	METAL	Lead, Total (XRF)	mg/kg	6140		
SP-40/SS01	7/28/2005	W3-004	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-40/SS02	7/28/2005	W3-005	METAL	Arsenic, Total (XRF)	mg/kg	179		J*
SP-40/SS02	7/28/2005	W3-005	METAL	Cadmium, Total (XRF)	mg/kg	97		
SP-40/SS02	7/28/2005	W3-005	METAL	Lead, Total (XRF)	mg/kg	2700		J*
SP-40/SS02	7/28/2005	W3-005	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-40/SS03	7/28/2005	W3-006	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-40/SS03	7/28/2005	W3-006	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-40/SS03	7/28/2005	W3-006	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-40/SS03	7/28/2005	W3-006	METAL	Zinc, Total (XRF)	mg/kg	77		
SP-41/SS01	8/1/2005	W3-135	METAL	Arsenic, Total (XRF)	mg/kg	309		
SP-41/SS01	8/1/2005	W3-135	METAL	Cadmium, Total (XRF)	mg/kg	155		
SP-41/SS01	8/1/2005	W3-135	METAL	Lead, Total (XRF)	mg/kg	4720		
SP-41/SS01	8/1/2005	W3-135	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-41/SS02	8/1/2005	W3-160	METAL	Arsenic, Total (XRF)	mg/kg	222		
SP-41/SS02	8/1/2005	W3-160	METAL	Cadmium, Total (XRF)	mg/kg	147		
SP-41/SS02	8/1/2005	W3-160	METAL	Lead, Total (XRF)	mg/kg	3440		
SP-41/SS02	8/1/2005	W3-160	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-41/SS03	8/1/2005	W3-161	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-41/SS03	8/1/2005	W3-161	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-41/SS03	8/1/2005	W3-161	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-41/SS03	8/1/2005	W3-161	METAL	Zinc, Total (XRF)	mg/kg	107		
SP-42/SS01	8/1/2005	W3-136	METAL	Arsenic, Total (XRF)	mg/kg	171		
SP-42/SS01	8/1/2005	W3-136	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-42/SS01	8/1/2005	W3-136	METAL	Lead, Total (XRF)	mg/kg	2270		
SP-42/SS01	8/1/2005	W3-136	METAL	Zinc, Total (XRF)	mg/kg	890		
SP-42/SS02	8/1/2005	W3-137	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-42/SS02	8/1/2005	W3-137	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-42/SS02	8/1/2005	W3-137	METAL	Lead, Total (XRF)	mg/kg	65		
SP-42/SS02	8/1/2005	W3-137	METAL	Zinc, Total (XRF)	mg/kg	568		
SP-42/SS03	8/1/2005	W3-138	METAL	Arsenic, Total (ICP)	mg/kg	12		
SP-42/SS03	8/1/2005	W3-138	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-42/SS03	8/1/2005	W3-138	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
SP-42/SS03	8/1/2005	W3-138	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-42/SS03	8/1/2005	W3-138	METAL	Lead, Total (ICP)	mg/kg	19		
SP-42/SS03	8/1/2005	W3-138	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-42/SS03	8/1/2005	W3-138	METAL	Zinc, Total (ICP)	mg/kg	73		
SP-42/SS03	8/1/2005	W3-138	METAL	Zinc, Total (XRF)	mg/kg	78		
SP-42/SS03	8/1/2005	W3-138	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-42/SS03	8/1/2005	W3-138	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
SP-42/SS03	8/1/2005	W3-138	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-43/SS01	8/1/2005	W3-139	METAL	Arsenic, Total (XRF)	mg/kg	152		
SP-43/SS01	8/1/2005	W3-139	METAL	Cadmium, Total (XRF)	mg/kg	153		
SP-43/SS01	8/1/2005	W3-139	METAL	Lead, Total (XRF)	mg/kg	2180		
SP-43/SS01	8/1/2005	W3-139	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-43/SS02	8/1/2005	W3-141	METAL	Arsenic, Total (XRF)	mg/kg	34		
SP-43/SS02	8/1/2005	W3-141	METAL	Cadmium, Total (XRF)	mg/kg	124		
SP-43/SS02	8/1/2005	W3-141	METAL	Lead, Total (XRF)	mg/kg	543		
SP-43/SS02	8/1/2005	W3-141	METAL	Zinc, Total (XRF)	mg/kg	3090		
SP-43/SS03	8/1/2005	W3-142	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-43/SS03	8/1/2005	W3-142	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-43/SS03	8/1/2005	W3-142	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-43/SS03	8/1/2005	W3-142	METAL	Zinc, Total (XRF)	mg/kg	155		
SP-44/SS01	8/1/2005	W3-150	METAL	Arsenic, Total (XRF)	mg/kg	22		J*
SP-44/SS01	8/1/2005	W3-150	METAL	Cadmium, Total (XRF)	mg/kg	63		
SP-44/SS01	8/1/2005	W3-150	METAL	Lead, Total (XRF)	mg/kg	401		
SP-44/SS01	8/1/2005	W3-150	METAL	Zinc, Total (XRF)	mg/kg	2470		
SP-44/SS02	8/1/2005	W3-162	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-44/SS02	8/1/2005	W3-162	METAL	Cadmium, Total (XRF)	mg/kg	46		
SP-44/SS02	8/1/2005	W3-162	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-44/SS02	8/1/2005	W3-162	METAL	Zinc, Total (XRF)	mg/kg	2040		
SP-44/SS03	8/1/2005	W3-163	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-44/SS03	8/1/2005	W3-163	METAL	Cadmium, Total (XRF)	mg/kg	26		
SP-44/SS03	8/1/2005	W3-163	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-44/SS03	8/1/2005	W3-163	METAL	Zinc, Total (XRF)	mg/kg	1220		
SP-45/SS01	8/1/2005	W3-143	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-45/SS01	8/1/2005	W3-143	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-45/SS01	8/1/2005	W3-143	METAL	Lead, Total (XRF)	mg/kg	120		
SP-45/SS01	8/1/2005	W3-143	METAL	Zinc, Total (XRF)	mg/kg	1530		
SP-45/SS02	8/1/2005	W3-144	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-45/SS02	8/1/2005	W3-144	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-45/SS02	8/1/2005	W3-144	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-45/SS02	8/1/2005	W3-144	METAL	Zinc, Total (XRF)	mg/kg	86		
SP-45/SS03	8/1/2005	W3-145	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-45/SS03	8/1/2005	W3-145	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-45/SS03	8/1/2005	W3-145	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-45/SS03	8/1/2005	W3-145	METAL	Zinc, Total (XRF)	mg/kg	61		
SP-46/SS01	8/1/2005	W3-146	METAL	Arsenic, Total (ICP)	mg/kg	25		J*
SP-46/SS01	8/1/2005	W3-146	METAL	Arsenic, Total (XRF)	mg/kg	64		
SP-46/SS01	8/1/2005	W3-146	METAL	Cadmium, Total (ICP)	mg/kg	29		
SP-46/SS01	8/1/2005	W3-146	METAL	Cadmium, Total (XRF)	mg/kg	31		
SP-46/SS01	8/1/2005	W3-146	METAL	Lead, Total (ICP)	mg/kg	934		
SP-46/SS01	8/1/2005	W3-146	METAL	Lead, Total (XRF)	mg/kg	1110		
SP-46/SS01	8/1/2005	W3-146	METAL	Zinc, Total (ICP)	mg/kg	2080		
SP-46/SS01	8/1/2005	W3-146	METAL	Zinc, Total (XRF)	mg/kg	2550		
SP-46/SS01	8/1/2005	W3-146	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-46/SS01	8/1/2005	W3-146	TCLPMET	Cadmium, TCLP	mg/L	0.295		
SP-46/SS01	8/1/2005	W3-146	TCLPMET	Lead, TCLP	mg/L	1.02		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-46/SS02	8/1/2005	W3-147	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-46/SS02	8/1/2005	W3-147	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-46/SS02	8/1/2005	W3-147	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-46/SS02	8/1/2005	W3-147	METAL	Zinc, Total (XRF)	mg/kg	77		
SP-46/SS03	8/1/2005	W3-149	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
SP-46/SS03	8/1/2005	W3-149	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-46/SS03	8/1/2005	W3-149	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-46/SS03	8/1/2005	W3-149	METAL	Zinc, Total (XRF)	mg/kg	51		
SP-47/SS01	7/28/2005	W3-007	METAL	Arsenic, Total (XRF)	mg/kg	416		>E
SP-47/SS01	7/28/2005	W3-007	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
SP-47/SS01	7/28/2005	W3-007	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
SP-47/SS01	7/28/2005	W3-007	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-47/SS02	7/28/2005	W3-008	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-47/SS02	7/28/2005	W3-008	METAL	Cadmium, Total (XRF)	mg/kg	16		
SP-47/SS02	7/28/2005	W3-008	METAL	Lead, Total (XRF)	mg/kg	53		
SP-47/SS02	7/28/2005	W3-008	METAL	Zinc, Total (XRF)	mg/kg	543		
SP-47/SS03	7/28/2005	W3-009	METAL	Arsenic, Total (XRF)	mg/kg	10	U	U
SP-47/SS03	7/28/2005	W3-009	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-47/SS03	7/28/2005	W3-009	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-47/SS03	7/28/2005	W3-009	METAL	Zinc, Total (XRF)	mg/kg	69		
SP-48/SS01	7/28/2005	W3-106	METAL	Arsenic, Total (XRF)	mg/kg	316		>E
SP-48/SS01	7/28/2005	W3-106	METAL	Cadmium, Total (XRF)	mg/kg	342		
SP-48/SS01	7/28/2005	W3-106	METAL	Lead, Total (XRF)	mg/kg	4740		
SP-48/SS01	7/28/2005	W3-106	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-48/SS02	7/28/2005	W3-107	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	>E
SP-48/SS02	7/28/2005	W3-107	METAL	Cadmium, Total (XRF)	mg/kg	322		
SP-48/SS02	7/28/2005	W3-107	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
SP-48/SS02	7/28/2005	W3-107	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-48/SS03	7/28/2005	W3-108	METAL	Arsenic, Total (XRF)	mg/kg	10	U	U
SP-48/SS03	7/28/2005	W3-108	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-48/SS03	7/28/2005	W3-108	METAL	Lead, Total (XRF)	mg/kg	50		
SP-48/SS03	7/28/2005	W3-108	METAL	Zinc, Total (XRF)	mg/kg	131		
SP-49/SS01	7/28/2005	W3-010	METAL	Arsenic, Total (XRF)	mg/kg	39		
SP-49/SS01	7/28/2005	W3-010	METAL	Cadmium, Total (XRF)	mg/kg	16		
SP-49/SS01	7/28/2005	W3-010	METAL	Lead, Total (XRF)	mg/kg	705		
SP-49/SS01	7/28/2005	W3-010	METAL	Zinc, Total (XRF)	mg/kg	2030		
SP-49/SS02	7/28/2005	W3-011	METAL	Arsenic, Total (ICP)	mg/kg	10	U	U
SP-49/SS02	7/28/2005	W3-011	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-49/SS02	7/28/2005	W3-011	METAL	Cadmium, Total (ICP)	mg/kg	3		U
SP-49/SS02	7/28/2005	W3-011	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-49/SS02	7/28/2005	W3-011	METAL	Lead, Total (ICP)	mg/kg	18		U
SP-49/SS02	7/28/2005	W3-011	METAL	Lead, Total (XRF)	mg/kg	20	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-49/SS02	7/28/2005	W3-011	METAL	Zinc, Total (ICP)	mg/kg	461		
SP-49/SS02	7/28/2005	W3-011	METAL	Zinc, Total (XRF)	mg/kg	593		
SP-49/SS02	7/28/2005	W3-011	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-49/SS02	7/28/2005	W3-011	TCLPMET	Cadmium, TCLP	mg/L	0.044		
SP-49/SS02	7/28/2005	W3-011	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-49/SS03	7/28/2005	W3-012	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-49/SS03	7/28/2005	W3-012	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-49/SS03	7/28/2005	W3-012	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-49/SS03	7/28/2005	W3-012	METAL	Zinc, Total (XRF)	mg/kg	63		
SP-50/SS01	7/28/2005	W3-001	METAL	Arsenic, Total (XRF)	mg/kg	14		
SP-50/SS01	7/28/2005	W3-001	METAL	Cadmium, Total (XRF)	mg/kg	91		
SP-50/SS01	7/28/2005	W3-001	METAL	Lead, Total (XRF)	mg/kg	264		
SP-50/SS01	7/28/2005	W3-001	METAL	Zinc, Total (XRF)	mg/kg	1590		
SP-50/SS02	7/28/2005	W3-002	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-50/SS02	7/28/2005	W3-002	METAL	Cadmium, Total (XRF)	mg/kg	86		
SP-50/SS02	7/28/2005	W3-002	METAL	Lead, Total (XRF)	mg/kg	36		
SP-50/SS02	7/28/2005	W3-002	METAL	Zinc, Total (XRF)	mg/kg	431		
SP-50/SS03	7/28/2005	W3-003	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-50/SS03	7/28/2005	W3-003	METAL	Cadmium, Total (XRF)	mg/kg	67		
SP-50/SS03	7/28/2005	W3-003	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-50/SS03	7/28/2005	W3-003	METAL	Zinc, Total (XRF)	mg/kg	265		
SP-51/SS01	8/1/2005	W3-164	METAL	Arsenic, Total (XRF)	mg/kg	95		
SP-51/SS01	8/1/2005	W3-164	METAL	Cadmium, Total (XRF)	mg/kg	171		
SP-51/SS01	8/1/2005	W3-164	METAL	Lead, Total (XRF)	mg/kg	1580		
SP-51/SS01	8/1/2005	W3-164	METAL	Zinc, Total (XRF)	mg/kg	5790		
SP-51/SS02	8/1/2005	W3-165	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-51/SS02	8/1/2005	W3-165	METAL	Cadmium, Total (XRF)	mg/kg	40		
SP-51/SS02	8/1/2005	W3-165	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-51/SS02	8/1/2005	W3-165	METAL	Zinc, Total (XRF)	mg/kg	890		
SP-51/SS03	8/1/2005	W3-166	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-51/SS03	8/1/2005	W3-166	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-51/SS03	8/1/2005	W3-166	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-51/SS03	8/1/2005	W3-166	METAL	Zinc, Total (XRF)	mg/kg	63		
SP-52/SS01	8/1/2005	W3-167	METAL	Arsenic, Total (XRF)	mg/kg	22		
SP-52/SS01	8/1/2005	W3-167	METAL	Cadmium, Total (XRF)	mg/kg	12		
SP-52/SS01	8/1/2005	W3-167	METAL	Lead, Total (XRF)	mg/kg	372		
SP-52/SS01	8/1/2005	W3-167	METAL	Zinc, Total (XRF)	mg/kg	1020		
SP-52/SS02	8/1/2005	W3-168	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-52/SS02	8/1/2005	W3-168	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-52/SS02	8/1/2005	W3-168	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-52/SS02	8/1/2005	W3-168	METAL	Zinc, Total (XRF)	mg/kg	84		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
SP-52/SS03	8/1/2005	W3-169	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-52/SS03	8/1/2005	W3-169	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-52/SS03	8/1/2005	W3-169	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-52/SS03	8/1/2005	W3-169	METAL	Zinc, Total (XRF)	mg/kg	64		
SP-53/SS01	8/1/2005	W3-170	METAL	Arsenic, Total (ICP)	mg/kg	10		
SP-53/SS01	8/1/2005	W3-170	METAL	Arsenic, Total (XRF)	mg/kg	32		
SP-53/SS01	8/1/2005	W3-170	METAL	Cadmium, Total (ICP)	mg/kg	54		
SP-53/SS01	8/1/2005	W3-170	METAL	Cadmium, Total (XRF)	mg/kg	78		
SP-53/SS01	8/1/2005	W3-170	METAL	Lead, Total (ICP)	mg/kg	446		
SP-53/SS01	8/1/2005	W3-170	METAL	Lead, Total (XRF)	mg/kg	596		
SP-53/SS01	8/1/2005	W3-170	METAL	Zinc, Total (ICP)	mg/kg	1360		
SP-53/SS01	8/1/2005	W3-170	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-53/SS01	8/1/2005	W3-170	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-53/SS01	8/1/2005	W3-170	TCLPMET	Cadmium, TCLP	mg/L	0.809		
SP-53/SS01	8/1/2005	W3-170	TCLPMET	Lead, TCLP	mg/L	0.298		
SP-53/SS02	8/1/2005	W3-172	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-53/SS02	8/1/2005	W3-172	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-53/SS02	8/1/2005	W3-172	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-53/SS02	8/1/2005	W3-172	METAL	Zinc, Total (XRF)	mg/kg	513		
SP-53/SS03	8/1/2005	W3-173	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-53/SS03	8/1/2005	W3-173	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-53/SS03	8/1/2005	W3-173	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-53/SS03	8/1/2005	W3-173	METAL	Zinc, Total (XRF)	mg/kg	60		
TR-01/SS01	7/26/2005	W2-007	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-01/SS01	7/26/2005	W2-007	METAL	Cadmium, Total (XRF)	mg/kg	651		
TR-01/SS01	7/26/2005	W2-007	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-01/SS01	7/26/2005	W2-007	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-01/SS02	7/26/2005	W2-009	METAL	Arsenic, Total (ICP)	mg/kg	615		
TR-01/SS02	7/26/2005	W2-009	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-01/SS02	7/26/2005	W2-009	METAL	Cadmium, Total (ICP)	mg/kg	242		
TR-01/SS02	7/26/2005	W2-009	METAL	Cadmium, Total (XRF)	mg/kg	315		
TR-01/SS02	7/26/2005	W2-009	METAL	Lead, Total (ICP)	mg/kg	16800		
TR-01/SS02	7/26/2005	W2-009	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-01/SS02	7/26/2005	W2-009	METAL	Zinc, Total (ICP)	mg/kg	57000		
TR-01/SS02	7/26/2005	W2-009	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-01/SS02	7/26/2005	W2-009	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-01/SS02	7/26/2005	W2-009	TCLPMET	Cadmium, TCLP	mg/L	2.87		
TR-01/SS02	7/26/2005	W2-009	TCLPMET	Lead, TCLP	mg/L	72.6		
TR-01/SS03	7/26/2005	W2-010	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-01/SS03	7/26/2005	W2-010	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-01/SS03	7/26/2005	W2-010	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-01/SS03	7/26/2005	W2-010	METAL	Zinc, Total (XRF)	mg/kg	50	U	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-02/SS01	7/26/2005	W2-011	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-02/SS01	7/26/2005	W2-011	METAL	Cadmium, Total (XRF)	mg/kg	469		
TR-02/SS01	7/26/2005	W2-011	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-02/SS01	7/26/2005	W2-011	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-02/SS03	7/26/2005	W2-012	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-02/SS03	7/26/2005	W2-012	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-02/SS03	7/26/2005	W2-012	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-02/SS03	7/26/2005	W2-012	METAL	Zinc, Total (XRF)	mg/kg	111		
TR-03/SS01	7/26/2005	W2-013	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-03/SS01	7/26/2005	W2-013	METAL	Cadmium, Total (XRF)	mg/kg	94		
TR-03/SS01	7/26/2005	W2-013	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-03/SS01	7/26/2005	W2-013	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-03/SS02	7/26/2005	W2-014	METAL	Arsenic, Total (XRF)	mg/kg	328		
TR-03/SS02	7/26/2005	W2-014	METAL	Cadmium, Total (XRF)	mg/kg	114		
TR-03/SS02	7/26/2005	W2-014	METAL	Lead, Total (XRF)	mg/kg	5280		
TR-03/SS02	7/26/2005	W2-014	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-03/SS03	7/26/2005	W2-015	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-03/SS03	7/26/2005	W2-015	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-03/SS03	7/26/2005	W2-015	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-03/SS03	7/26/2005	W2-015	METAL	Zinc, Total (XRF)	mg/kg	94		
TR-04/SS01	7/26/2005	W2-016	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-04/SS01	7/26/2005	W2-016	METAL	Cadmium, Total (XRF)	mg/kg	753		
TR-04/SS01	7/26/2005	W2-016	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-04/SS01	7/26/2005	W2-016	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-04/SS03	7/26/2005	W2-017	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-04/SS03	7/26/2005	W2-017	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-04/SS03	7/26/2005	W2-017	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-04/SS03	7/26/2005	W2-017	METAL	Zinc, Total (XRF)	mg/kg	43		
TR-05/SS01	7/26/2005	W2-018	METAL	Arsenic, Total (ICP)	mg/kg	475		
TR-05/SS01	7/26/2005	W2-018	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-05/SS01	7/26/2005	W2-018	METAL	Cadmium, Total (ICP)	mg/kg	405		
TR-05/SS01	7/26/2005	W2-018	METAL	Cadmium, Total (XRF)	mg/kg	401		
TR-05/SS01	7/26/2005	W2-018	METAL	Lead, Total (ICP)	mg/kg	13300		
TR-05/SS01	7/26/2005	W2-018	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-05/SS01	7/26/2005	W2-018	METAL	Zinc, Total (ICP)	mg/kg	119000		
TR-05/SS01	7/26/2005	W2-018	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-05/SS01	7/26/2005	W2-018	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-05/SS01	7/26/2005	W2-018	TCLPMET	Cadmium, TCLP	mg/L	6.03		
TR-05/SS01	7/26/2005	W2-018	TCLPMET	Lead, TCLP	mg/L	48.7		
TR-05/SS02	7/26/2005	W2-019	METAL	Arsenic, Total (XRF)	mg/kg	504		
TR-05/SS02	7/26/2005	W2-019	METAL	Cadmium, Total (XRF)	mg/kg	340		
TR-05/SS02	7/26/2005	W2-019	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-05/SS02	7/26/2005	W2-019	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-05/SS03	7/26/2005	W2-020	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-05/SS03	7/26/2005	W2-020	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-05/SS03	7/26/2005	W2-020	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-05/SS03	7/26/2005	W2-020	METAL	Zinc, Total (XRF)	mg/kg	94		
TR-06/SS01	7/26/2005	W2-022	METAL	Arsenic, Total (XRF)	mg/kg	545		
TR-06/SS01	7/26/2005	W2-022	METAL	Cadmium, Total (XRF)	mg/kg	198		
TR-06/SS01	7/26/2005	W2-022	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-06/SS01	7/26/2005	W2-022	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-06/SS03	7/26/2005	W2-023	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-06/SS03	7/26/2005	W2-023	METAL	Cadmium, Total (XRF)	mg/kg	76		
TR-06/SS03	7/26/2005	W2-023	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-06/SS03	7/26/2005	W2-023	METAL	Zinc, Total (XRF)	mg/kg	4380		
TR-07/SS01	7/26/2005	W2-024	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-07/SS01	7/26/2005	W2-024	METAL	Cadmium, Total (XRF)	mg/kg	202		
TR-07/SS01	7/26/2005	W2-024	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-07/SS01	7/26/2005	W2-024	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-07/SS02	7/26/2005	W2-025	METAL	Arsenic, Total (XRF)	mg/kg	334		
TR-07/SS02	7/26/2005	W2-025	METAL	Cadmium, Total (XRF)	mg/kg	46		
TR-07/SS02	7/26/2005	W2-025	METAL	Lead, Total (XRF)	mg/kg	5290		
TR-07/SS02	7/26/2005	W2-025	METAL	Zinc, Total (XRF)	mg/kg	7440		
TR-07/SS03	7/26/2005	W2-026	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-07/SS03	7/26/2005	W2-026	METAL	Cadmium, Total (XRF)	mg/kg	61		
TR-07/SS03	7/26/2005	W2-026	METAL	Lead, Total (XRF)	mg/kg	24		
TR-07/SS03	7/26/2005	W2-026	METAL	Zinc, Total (XRF)	mg/kg	3460		
TR-08/SS01	7/26/2005	W2-027	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-08/SS01	7/26/2005	W2-027	METAL	Cadmium, Total (XRF)	mg/kg	255		
TR-08/SS01	7/26/2005	W2-027	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-08/SS01	7/26/2005	W2-027	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-08/SS03	7/26/2005	W2-028	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-08/SS03	7/26/2005	W2-028	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-08/SS03	7/26/2005	W2-028	METAL	Lead, Total (XRF)	mg/kg	23		
TR-08/SS03	7/26/2005	W2-028	METAL	Zinc, Total (XRF)	mg/kg	127		
TR-09/SS01	7/27/2005	W2-035	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-09/SS01	7/27/2005	W2-035	METAL	Cadmium, Total (XRF)	mg/kg	556		
TR-09/SS01	7/27/2005	W2-035	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-09/SS01	7/27/2005	W2-035	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	J*

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-09/SS02	7/27/2005	W2-036	METAL	Arsenic, Total (ICP)	mg/kg	502		
TR-09/SS02	7/27/2005	W2-036	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-09/SS02	7/27/2005	W2-036	METAL	Cadmium, Total (ICP)	mg/kg	691		
TR-09/SS02	7/27/2005	W2-036	METAL	Cadmium, Total (XRF)	mg/kg	636		
TR-09/SS02	7/27/2005	W2-036	METAL	Lead, Total (ICP)	mg/kg	13500		
TR-09/SS02	7/27/2005	W2-036	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-09/SS02	7/27/2005	W2-036	METAL	Zinc, Total (ICP)	mg/kg	84400		
TR-09/SS02	7/27/2005	W2-036	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	J*
TR-09/SS02	7/27/2005	W2-036	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-09/SS02	7/27/2005	W2-036	TCLPMET	Cadmium, TCLP	mg/L	3.63		
TR-09/SS02	7/27/2005	W2-036	TCLPMET	Lead, TCLP	mg/L	4.87		
TR-09/SS03	7/27/2005	W2-038	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-09/SS03	7/27/2005	W2-038	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-09/SS03	7/27/2005	W2-038	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-09/SS03	7/27/2005	W2-038	METAL	Zinc, Total (XRF)	mg/kg	71		J*
TR-10/SS01	7/27/2005	W2-039	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-10/SS01	7/27/2005	W2-039	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
TR-10/SS01	7/27/2005	W2-039	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-10/SS01	7/27/2005	W2-039	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	J*
TR-10/SS03	7/27/2005	W2-040	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-10/SS03	7/27/2005	W2-040	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-10/SS03	7/27/2005	W2-040	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-10/SS03	7/27/2005	W2-040	METAL	Zinc, Total (XRF)	mg/kg	81		J*
TR-1000/SS01	7/26/2005	W2-008	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-1000/SS01	7/26/2005	W2-008	METAL	Cadmium, Total (XRF)	mg/kg	654		
TR-1000/SS01	7/26/2005	W2-008	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-1000/SS01	7/26/2005	W2-008	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-1001/SS03	7/26/2005	W2-021	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-1001/SS03	7/26/2005	W2-021	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-1001/SS03	7/26/2005	W2-021	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-1001/SS03	7/26/2005	W2-021	METAL	Zinc, Total (XRF)	mg/kg	80		
TR-1002/SS02	7/27/2005	W2-037	METAL	Arsenic, Total (ICP)	mg/kg	555		
TR-1002/SS02	7/27/2005	W2-037	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-1002/SS02	7/27/2005	W2-037	METAL	Cadmium, Total (ICP)	mg/kg	674		
TR-1002/SS02	7/27/2005	W2-037	METAL	Cadmium, Total (XRF)	mg/kg	653		
TR-1002/SS02	7/27/2005	W2-037	METAL	Lead, Total (ICP)	mg/kg	14900		
TR-1002/SS02	7/27/2005	W2-037	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-1002/SS02	7/27/2005	W2-037	METAL	Zinc, Total (ICP)	mg/kg	93300		
TR-1002/SS02	7/27/2005	W2-037	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	J*
TR-1002/SS02	7/27/2005	W2-037	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-1002/SS02	7/27/2005	W2-037	TCLPMET	Cadmium, TCLP	mg/L	3.95		
TR-1002/SS02	7/27/2005	W2-037	TCLPMET	Lead, TCLP	mg/L	4.98		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-1003/SS01	7/27/2005	W2-045	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	J*
TR-1003/SS01	7/27/2005	W2-045	METAL	Cadmium, Total (XRF)	mg/kg	202		
TR-1003/SS01	7/27/2005	W2-045	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-1003/SS01	7/27/2005	W2-045	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-1004/SS03	7/28/2005	W3-038	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-1004/SS03	7/28/2005	W3-038	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-1004/SS03	7/28/2005	W3-038	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-1004/SS03	7/28/2005	W3-038	METAL	Zinc, Total (XRF)	mg/kg	66		
TR-11/SS01	7/26/2005	W2-029	METAL	Arsenic, Total (XRF)	mg/kg	321		
TR-11/SS01	7/26/2005	W2-029	METAL	Cadmium, Total (XRF)	mg/kg	200		
TR-11/SS01	7/26/2005	W2-029	METAL	Lead, Total (XRF)	mg/kg	4780		
TR-11/SS01	7/26/2005	W2-029	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-11/SS02	7/26/2005	W2-030	METAL	Arsenic, Total (XRF)	mg/kg	186		
TR-11/SS02	7/26/2005	W2-030	METAL	Cadmium, Total (XRF)	mg/kg	99		
TR-11/SS02	7/26/2005	W2-030	METAL	Lead, Total (XRF)	mg/kg	2980		
TR-11/SS02	7/26/2005	W2-030	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-11/SS03	7/26/2005	W2-031	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-11/SS03	7/26/2005	W2-031	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-11/SS03	7/26/2005	W2-031	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-11/SS03	7/26/2005	W2-031	METAL	Zinc, Total (XRF)	mg/kg	56		
TR-12/SS01	7/28/2005	W3-031	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-12/SS01	7/28/2005	W3-031	METAL	Cadmium, Total (XRF)	mg/kg	287		
TR-12/SS01	7/28/2005	W3-031	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-12/SS01	7/28/2005	W3-031	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-12/SS03	7/28/2005	W3-032	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-12/SS03	7/28/2005	W3-032	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-12/SS03	7/28/2005	W3-032	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-12/SS03	7/28/2005	W3-032	METAL	Zinc, Total (XRF)	mg/kg	70		
TR-13/SS01	7/27/2005	W2-041	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-13/SS01	7/27/2005	W2-041	METAL	Cadmium, Total (XRF)	mg/kg	1000	>E	
TR-13/SS01	7/27/2005	W2-041	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-13/SS01	7/27/2005	W2-041	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-13/SS02	7/27/2005	W2-042	METAL	Arsenic, Total (XRF)	mg/kg	510		
TR-13/SS02	7/27/2005	W2-042	METAL	Cadmium, Total (XRF)	mg/kg	199		
TR-13/SS02	7/27/2005	W2-042	METAL	Lead, Total (XRF)	mg/kg	5000	>E	
TR-13/SS02	7/27/2005	W2-042	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-13/SS03	7/27/2005	W2-043	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
TR-13/SS03	7/27/2005	W2-043	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-13/SS03	7/27/2005	W2-043	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
TR-13/SS03	7/27/2005	W2-043	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-13/SS03	7/27/2005	W2-043	METAL	Lead, Total (ICP)	mg/kg	20		
TR-13/SS03	7/27/2005	W2-043	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-13/SS03	7/27/2005	W2-043	METAL	Lead, Total (XRF)	mg/kg	20		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-13/SS03	7/27/2005	W2-043	METAL	Zinc, Total (ICP)	mg/kg	74		J*
TR-13/SS03	7/27/2005	W2-043	METAL	Zinc, Total (XRF)	mg/kg	85		
TR-13/SS03	7/27/2005	W2-043	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-13/SS03	7/27/2005	W2-043	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
TR-13/SS03	7/27/2005	W2-043	TCLPMET	Lead, TCLP	mg/L	0.05	U	
TR-14/SS01	7/27/2005	W2-044	METAL	Arsenic, Total (XRF)	mg/kg	372		J*
TR-14/SS01	7/27/2005	W2-044	METAL	Cadmium, Total (XRF)	mg/kg	156		
TR-14/SS01	7/27/2005	W2-044	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-14/SS01	7/27/2005	W2-044	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-14/SS03	7/27/2005	W2-046	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-14/SS03	7/27/2005	W2-046	METAL	Cadmium, Total (XRF)	mg/kg	10	U	J*
TR-14/SS03	7/27/2005	W2-046	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-14/SS03	7/27/2005	W2-046	METAL	Zinc, Total (XRF)	mg/kg	97		
TR-15/SS01	7/26/2005	W2-032	METAL	Arsenic, Total (XRF)	mg/kg	354		
TR-15/SS01	7/26/2005	W2-032	METAL	Cadmium, Total (XRF)	mg/kg	54		
TR-15/SS01	7/26/2005	W2-032	METAL	Lead, Total (XRF)	mg/kg	4720		J*
TR-15/SS01	7/26/2005	W2-032	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-15/SS02	7/26/2005	W2-033	METAL	Arsenic, Total (XRF)	mg/kg	505		
TR-15/SS02	7/26/2005	W2-033	METAL	Cadmium, Total (XRF)	mg/kg	232		
TR-15/SS02	7/26/2005	W2-033	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-15/SS02	7/26/2005	W2-033	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	J*
TR-15/SS03	7/26/2005	W2-034	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-15/SS03	7/26/2005	W2-034	METAL	Cadmium, Total (XRF)	mg/kg	33		
TR-15/SS03	7/26/2005	W2-034	METAL	Lead, Total (XRF)	mg/kg	47		
TR-15/SS03	7/26/2005	W2-034	METAL	Zinc, Total (XRF)	mg/kg	922		
TR-16/SS01	7/27/2005	W2-047	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	>E
TR-16/SS01	7/27/2005	W2-047	METAL	Cadmium, Total (XRF)	mg/kg	444		
TR-16/SS01	7/27/2005	W2-047	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-16/SS01	7/27/2005	W2-047	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-16/SS03	7/27/2005	W2-048	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-16/SS03	7/27/2005	W2-048	METAL	Cadmium, Total (XRF)	mg/kg	10	U	>E
TR-16/SS03	7/27/2005	W2-048	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-16/SS03	7/27/2005	W2-048	METAL	Zinc, Total (XRF)	mg/kg	81		
TR-17/SS01	7/28/2005	W3-033	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-17/SS01	7/28/2005	W3-033	METAL	Cadmium, Total (XRF)	mg/kg	89		
TR-17/SS01	7/28/2005	W3-033	METAL	Lead, Total (XRF)	mg/kg	5500	>E	>E
TR-17/SS01	7/28/2005	W3-033	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-17/SS02	7/28/2005	W3-034	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-17/SS02	7/28/2005	W3-034	METAL	Cadmium, Total (XRF)	mg/kg	66		
TR-17/SS02	7/28/2005	W3-034	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-17/SS02	7/28/2005	W3-034	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-17/SS03	7/28/2005	W3-035	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-17/SS03	7/28/2005	W3-035	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-17/SS03	7/28/2005	W3-035	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-17/SS03	7/28/2005	W3-035	METAL	Zinc, Total (XRF)	mg/kg	384		
TR-18/SS01	7/28/2005	W3-036	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-18/SS01	7/28/2005	W3-036	METAL	Cadmium, Total (XRF)	mg/kg	85		
TR-18/SS01	7/28/2005	W3-036	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-18/SS01	7/28/2005	W3-036	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-18/SS03	7/28/2005	W3-037	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-18/SS03	7/28/2005	W3-037	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-18/SS03	7/28/2005	W3-037	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-18/SS03	7/28/2005	W3-037	METAL	Zinc, Total (XRF)	mg/kg	71		
TR-19/SS01	7/28/2005	W3-039	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-19/SS01	7/28/2005	W3-039	METAL	Cadmium, Total (XRF)	mg/kg	513		
TR-19/SS01	7/28/2005	W3-039	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-19/SS01	7/28/2005	W3-039	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-19/SS02	7/28/2005	W3-040	METAL	Arsenic, Total (ICP)	mg/kg	367		
TR-19/SS02	7/28/2005	W3-040	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-19/SS02	7/28/2005	W3-040	METAL	Cadmium, Total (ICP)	mg/kg	594		
TR-19/SS02	7/28/2005	W3-040	METAL	Cadmium, Total (XRF)	mg/kg	441		
TR-19/SS02	7/28/2005	W3-040	METAL	Lead, Total (ICP)	mg/kg	25200		
TR-19/SS02	7/28/2005	W3-040	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-19/SS02	7/28/2005	W3-040	METAL	Zinc, Total (ICP)	mg/kg	104000		
TR-19/SS02	7/28/2005	W3-040	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-19/SS02	7/28/2005	W3-040	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TR-19/SS02	7/28/2005	W3-040	TCLPMET	Cadmium, TCLP	mg/L	3.48		
TR-19/SS02	7/28/2005	W3-040	TCLPMET	Lead, TCLP	mg/L	47.2		
TR-19/SS03	7/28/2005	W3-041	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-19/SS03	7/28/2005	W3-041	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-19/SS03	7/28/2005	W3-041	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-19/SS03	7/28/2005	W3-041	METAL	Zinc, Total (XRF)	mg/kg	85		
TR-20/SS01	7/28/2005	W3-042	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-20/SS01	7/28/2005	W3-042	METAL	Cadmium, Total (XRF)	mg/kg	173		
TR-20/SS01	7/28/2005	W3-042	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-20/SS01	7/28/2005	W3-042	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-20/SS03	7/28/2005	W3-043	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-20/SS03	7/28/2005	W3-043	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-20/SS03	7/28/2005	W3-043	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-20/SS03	7/28/2005	W3-043	METAL	Zinc, Total (XRF)	mg/kg	79		

Table 2
Data Qualifiers
Soil and Sediment Samples

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples								
TR-21/SS01	7/28/2005	W3-044	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
TR-21/SS01	7/28/2005	W3-044	METAL	Cadmium, Total (XRF)	mg/kg	667		
TR-21/SS01	7/28/2005	W3-044	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
TR-21/SS01	7/28/2005	W3-044	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
TR-21/SS03	7/28/2005	W3-045	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TR-21/SS03	7/28/2005	W3-045	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TR-21/SS03	7/28/2005	W3-045	METAL	Lead, Total (XRF)	mg/kg	20	U	
TR-21/SS03	7/28/2005	W3-045	METAL	Zinc, Total (XRF)	mg/kg	90		

Notes:

>E = Result exceeds calibration range of instrument

ICP = Inductively Coupled Plasma

J* = Qualified as estimated during QC evaluation

J- = Qualified as estimated during QC evaluation (Biased low)

mg/kg = milligrams per kilogram

mg/L = milligrams per Liter

TCLP = Toxicity Characteristic Leaching Procedure

U = Compound was not detected

XRF = X-Ray Fluorescence Spectroscopy

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		BG-OFF-01/SD01 9/29/2005	BG-OFF-1000/SD01 9/29/2005	OFF-08/SD01 7/20/2005	OFF-1000/SD01 7/20/2005	OSL-17/SS01 8/31/2005	OSL-1002/SS01 8/31/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	11	12
Cadmium, ICP	mg/kg	--	--	--	--	2	2
Lead, ICP	mg/kg	--	--	--	--	79	82
Zinc, ICP	mg/kg	--	--	--	--	346	350
Arsenic, XRF	mg/kg	10 U	10 U	59	63	10 U	10 U
Cadmium, XRF	mg/kg	10 U	10 U	166	197	10 U	10 U
Lead, XRF	mg/kg	20 U J-	20 U J-	769	820	91	91 J-
Zinc, XRF	mg/kg	50	52	6230	7000 >E	432	465
Arsenic, TCLP	mg/L	--	--	--	--	0.05 U	0.05 U
Cadmium, TCLP	mg/L	--	--	--	--	0.007	0.005 U
Lead, TCLP	mg/L	--	--	--	--	0.05 U	0.05 U

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OSL-25/SS01 8/29/2005	OSL-1004/SS01 8/29/2005	OSL-39/SS01 8/31/2005	OSL-1001/SS01 8/31/2005	OSL-41/SS01 8/29/2005	OSL-1003/SS01 8/29/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	24	31	--	--
Cadmium, ICP	mg/kg	--	--	19	23	--	--
Lead, ICP	mg/kg	--	--	677	873	--	--
Zinc, ICP	mg/kg	--	--	2350	2660	--	--
Arsenic, XRF	mg/kg	10 U	11	57	71	31	27
Cadmium, XRF	mg/kg	10 U	10 U	23	28	10 U	10 U
Lead, XRF	mg/kg	145	137	867	1120 J-	300	297
Zinc, XRF	mg/kg	504	492	2990	3370	1540	1830
Arsenic, TCLP	mg/L	--	--	0.05 U	0.05 U	--	--
Cadmium, TCLP	mg/L	--	--	0.192	0.192	--	--
Lead, TCLP	mg/L	--	--	0.239	0.24	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OSL-50/SS01 8/31/2005	OSL-1000/SS01 8/31/2005	OSL-73/SS01 8/30/2005	OSL-1005/SS01 8/30/2005	PZ-07/SS02 8/2/2005	PZ-1000/SS02 8/2/2005
Parameter	Units						
Arsenic, ICP	mg/kg	10 U	10 U	--	--	--	--
Cadmium, ICP	mg/kg	1 U	1 U	--	--	--	--
Lead, ICP	mg/kg	37	41	--	--	--	--
Zinc, ICP	mg/kg	210	134	--	--	--	--
Arsenic, XRF	mg/kg	10 U	10 U	12	17	78	74
Cadmium, XRF	mg/kg	10 U	10 U	10 U	10 U	54	53
Lead, XRF	mg/kg	37	36	100	128	1320	1340
Zinc, XRF	mg/kg	164	175	356	429	2180	2510
Arsenic, TCLP	mg/L	0.05 U	0.05 U	--	--	--	--
Cadmium, TCLP	mg/L	0.005 U	0.005 U	--	--	--	--
Lead, TCLP	mg/L	0.05 U	0.05 U	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		PZ-09/SS04 8/2/2005	PZ-1002/SS04 8/2/2005	SMP-03/SD01 7/19/2005	SMP-1000/SD01 7/19/2005	SP-01/SS01 7/28/2005	SP-1000/SS01 7/28/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	32	27	11	10 U
Cadmium, ICP	mg/kg	--	--	28	27	3	3
Lead, ICP	mg/kg	--	--	334	321	72	83
Zinc, ICP	mg/kg	--	--	2450	2400	696	702
Arsenic, XRF	mg/kg	30	10 U	22	22	10 U	10 U
Cadmium, XRF	mg/kg	97	12	22	22	10 U	10 U
Lead, XRF	mg/kg	387	49	321	318	81	94
Zinc, XRF	mg/kg	5720	472	3460	2480	815	851
Arsenic, TCLP	mg/L	--	--	0.074	0.078	0.05 U	0.05 U
Cadmium, TCLP	mg/L	--	--	0.005 U	0.005 U	0.027	0.023
Lead, TCLP	mg/L	--	--	0.050 U	0.050 U	0.05 U	0.05 U

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-06/SS02 7/29/2005	SP-1001/SS02 7/29/2005	SP-11/SS01 7/28/2005	SP-1002/SS01 7/28/2005	SP-16/SS03 7/29/2005	SP-1003/SS03 7/29/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	10 U	10 U	41	43	10 U	10 U
Cadmium, XRF	mg/kg	10 U	10 U	28	23	10 U	10 U
Lead, XRF	mg/kg	20 U	20 U	626	697	20 U	20 U
Zinc, XRF	mg/kg	224	193	2450	2500	317	466
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-19/SS01 7/29/2005	SP-1004/SS01 7/29/2005	SP-22/SS02 7/29/2005	SP-1005/SS02 7/29/2005	SP-25/SS02 7/29/2005	SP-1006/SS02 7/29/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	10 U	10 U
Cadmium, ICP	mg/kg	--	--	--	--	1 U	1
Lead, ICP	mg/kg	--	--	--	--	17	11
Zinc, ICP	mg/kg	--	--	--	--	83	239
Arsenic, XRF	mg/kg	43	35	10 U	10 U	10 U	10 U
Cadmium, XRF	mg/kg	25	24	10 U	10 U	10 U	10 U
Lead, XRF	mg/kg	702	533	20 U	20 U	20 U	20 U
Zinc, XRF	mg/kg	3920	3400	377	238	112	318
Arsenic, TCLP	mg/L	--	--	--	--	0.05 U	0.05 U
Cadmium, TCLP	mg/L	--	--	--	--	0.025	0.013
Lead, TCLP	mg/L	--	--	--	--	0.05 U	0.05 U

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-29/SS02 7/29/2005	SP-1007/SS02 7/29/2005	SP-32/SS03 8/1/2005	SP-1008/SS03 8/1/2005	SP-36/SS02 8/1/2005	SP-1009/SS02 8/1/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	10 U	102	10 U	10 U	10 U	11
Cadmium, XRF	mg/kg	10 U	56	10 U	10 U	10 U	15
Lead, XRF	mg/kg	60	1690	20 U	20 U	138	173
Zinc, XRF	mg/kg	773	6600	64	63	1190	1560
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-39/SS03 7/29/2005	SP-1010/SS03 7/29/2005	SP-43/SS01 8/1/2005	SP-1011/SS01 8/1/2005	SP-46/SS02 8/1/2005	SP-1012/SS02 8/1/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	10 U	10 U	152	129	10 UJ*	10 UJ*
Cadmium, XRF	mg/kg	10 U	10 U	153	158	10 U	10 U
Lead, XRF	mg/kg	20 U	20 U	2180	1940	20 U	20 U
Zinc, XRF	mg/kg	246	383	7000 >E	7000 >E	77	71
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-49/SS03 7/28/2005	SP-1013/SS03 7/28/2005	SP-53/SS01 8/1/2005	SP-1014/SS01 8/1/2005	TR-01/SS01 7/26/2005	TR-1000/SS01 7/26/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	10	16	--	--
Cadmium, ICP	mg/kg	--	--	54	65	--	--
Lead, ICP	mg/kg	--	--	446	568	--	--
Zinc, ICP	mg/kg	--	--	1360	1810	--	--
Arsenic, XRF	mg/kg	10 U	10 U	32	44	650 >E	650 >E
Cadmium, XRF	mg/kg	10 U	10 U	78	89	651	654
Lead, XRF	mg/kg	20 U	20 U	596	789	5500 >E	5500 >E
Zinc, XRF	mg/kg	63	70	7000 >E	2290	7000 >E	7000 >E
Arsenic, TCLP	mg/L	--	--	0.05 U	0.05 U	--	--
Cadmium, TCLP	mg/L	--	--	0.809	0.719	--	--
Lead, TCLP	mg/L	--	--	0.298	0.221	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		TR-05/SS03 7/26/2005	TR-1001/SS03 7/26/2005	TR-09/SS02 7/27/2005	TR-1002/SS02 7/27/2005	TR-14/SS01 7/27/2005	TR-1003/SS01 7/27/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	502	555	--	--
Cadmium, ICP	mg/kg	--	--	691	674	--	--
Lead, ICP	mg/kg	--	--	13500	14900	--	--
Zinc, ICP	mg/kg	--	--	84400	93300	--	--
Arsenic, XRF	mg/kg	10 U	10 U	650 >E	650 >E	372	650 > E
Cadmium, XRF	mg/kg	10 U	10 U	636	653	156	202
Lead, XRF	mg/kg	20 U	20 U	5500 >E	5500 >E	5500 >E	5500 >E
Zinc, XRF	mg/kg	94	80	7000 >EJ*	7000 >EJ*	7000 >EJ*	7000 >EJ*
Arsenic, TCLP	mg/L	--	--	0.05 U	0.05 U	--	--
Cadmium, TCLP	mg/L	--	--	3.63	3.95	--	--
Lead, TCLP	mg/L	--	--	4.87	4.98	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		TR-18/SS03 7/28/2005	TR-1004/SS03 7/28/2005	TR-10/SS01 7/27/2005	TR-1000/SS01 7/27/2005	TSL-04/SS01 8/30/2005	TSL-1000/SS01 8/30/2005
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	13	14
Cadmium, ICP	mg/kg	--	--	--	--	3	3
Lead, ICP	mg/kg	--	--	--	--	145	144
Zinc, ICP	mg/kg	--	--	--	--	517	551
Arsenic, XRF	mg/kg	10 U	10 U	650 >E	650 >E	12	10 U
Cadmium, XRF	mg/kg	10 U	10 U	1000	654	10 U	10 U
Lead, XRF	mg/kg	20 U	20 U	5500 >E	5500 >E	177	170
Zinc, XRF	mg/kg	71	66	7000 >E	7000 >E	692	720
Arsenic, TCLP	mg/L	--	--	--	--	0.05 U	0.05 U
Cadmium, TCLP	mg/L	--	--	--	--	0.016	0.013
Lead, TCLP	mg/L	--	--	--	--	0.188	0.05 U

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		PD1-02/SD01 7/20/2005 See Note	PD1-02/SD01Rep1 7/20/2005 See Note	PD1-02/SD01Rep2 7/20/2005 See Note	OFF-04/SD01 7/20/2005 See Note	OFF-04/SD01Rep1 7/20/2005 See Note	OFF-04/SD01Rep2 7/20/2005 See Note
Parameter	Units						
Arsenic, ICP	mg/kg	63	--	--	--	--	--
Cadmium, ICP	mg/kg	1400	--	--	--	--	--
Lead, ICP	mg/kg	1020	--	--	--	--	--
Zinc, ICP	mg/kg	44700	--	--	--	--	--
Arsenic, XRF	mg/kg	168	187	195	277	267	238
Cadmium, XRF	mg/kg	1000 > E	1000 >E	1000 >E	975	891	700
Lead, XRF	mg/kg	2270	2400	2740	3940	3930	3670
Zinc, XRF	mg/kg	7000	7000 >E	7000 >E	7000 >E	7000 >E	7000 >E
Arsenic, TCLP	mg/L	0.071	0.066	0.094	--	--	--
Cadmium, TCLP	mg/L	0.016	0.036	0.014	--	--	--
Lead, TCLP	mg/L	0.116	0.282	0.131	--	--	--

Notes:

Bold, hilite indicates discrepancy between the field duplicate results.

Samples with "Rep 1" and "Rep 2" were originally collected as MS/MSD samples but were reported separately by the laboratory. (See Text)

-- = Indicates results not reported by this method.

>E = Result exceeds calibration range of instrument

ICP = Inductively Coupled Plasma

ID = Identification

J* = Qualified as estimated during QC evaluation

J- = Qualified as estimated during QC evaluation (Biased low)

mg/kg = milligrams per kilogram

mg/L = milligrams per Liter

TCLP = Toxicity Characteristic Leaching Procedure

U = Compound was not detected

XRF = X-Ray Fluorescence Spectroscopy

**Oklahoma SEL
RI Phase I Data
Aqueous Samples**

Data Quality Control Review

Date: December 22 - 28, 2005

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Sharon Shelton

Laboratory Information: ODEQ - SEL

707 N. Robinson, Oklahoma City, OK 73102

Phone Number: 405-702-1113

Contact: Susan Elmenhorst-Mensik, QA

Laboratory Job Number(s):

<u>Metal 378844-378866 and 379557</u>	<u>Metal 383120 - 384442</u>
<u>Gen Chem 378845-378865 and 379557</u>	<u>Gen Chem 383122 - 384442</u>
_____	_____
_____	_____
_____	_____

Signature of Reviewer: Sharon Shelton

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review.

Sample PD1-02/SW01 was submitted in triplicate for matrix spike/matrix spike duplicate (MS/MSD) analysis. The samples were labeled PD1-02/SW01, PD1-02/SW01MS, and PD1-02/SW01MSD on the chain-of-custody (COC). In addition to providing the requested MS/MSD, the lab also provided unspiked results for PD1-02/SW01MS and PD1-02/SW01MSD. In order to distinguish the unspiked results from the spiked MS/MSD data, the unspiked results were renamed to PD1-02/SW01Rep1 and PD1-02/SW01Rep2, respectively. Results for all three samples were compared for precision (see Section 9).

Sample OFF-04/SW01 was submitted in triplicate for MS/MSD analysis. The samples were labeled OFF-04/SW01, OFF-04/SW01MS, and OFF-04/SW01MSD on the COC. In addition to providing the requested MS/MSD, the lab also provided unspiked results for OFF-04/SW01MS and OFF-04/SW01MSD. In order to distinguish the unspiked results from the spiked MS/MSD data, the unspiked results were renamed to OFF-04/SW01Rep1 and OFF-04/SW01Rep2, respectively. Results for all three samples were compared for precision (see Section 9).

Insufficient water was available from several temporary piezometers and monitoring wells to perform all of the planned analyses. As such, no general chemistry analyses were performed for the following samples: PZ-01/GW01, PZ-02/GW01, PZ-05/GW01, PZ-06/GW01, and MW-02/GW01. Additionally, only the metals and total organic carbon (TOC) analyses could be performed for Samples PZ-03/GW01, PZ-04/GW01 and PZ-08/GW01.

2. Chain-of-Custody Documentation: COCs were appropriately signed.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): General chemistry analysis of chemical oxygen demand (COD), TOC, chloride, and sulfate were performed outside of the method holding times for Sample OFF-09/SW01 (Lab ID 379557). The following table outlines the data qualification that was required due to the holding time exceedences and potential for low bias in the data.

Sample Name	Lab ID	Analysis	Days Outside Hold Time	Qualifier
OFF-09/SW01	379557	COD	1	None
		TOC	46	R
		Chloride	11	J-
		Sulfate	11	J-

5. Method Blanks:
 - **Zinc** – Zinc was detected at a concentration of 29 µg/L in the method blank associated with Lab ID Numbers 378845 to 378866. Since the zinc results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified	Sample Name	Lab ID	U* Qualified
SMP-06/SW01	378845	None	PD1-03/SW01	378856	Zinc
SMP-05/SW01	378846	None	PD2-02/SW01	378857	None
SMP-04/SW01	378847	Zinc	PD2-01/SW01	378858	None
SMP-03/SW01	378848	None	PD3-01/SW01	378859	Zinc

Sample Name	Lab ID	U* Qualified	Sample Name	Lab ID	U* Qualified
SMP-1000/SW01	378849	None	PD3-1000/SW01	378860	None
SMP-02/SW01	378850	None	PD3-02/SW01	378861	Zinc
SMP-01/SW01	378851	None	OFF-02/SW01	378862	None
PD1-01/SW01	378852	Zinc	OFF-04/SW01	378863	None
PD1-02/SW01	378853	Zinc	OFF-02/SW01Rep1	378864	None
PD1-02/SW01Rep1	378854	Zinc	OFF-02/SW01Rep2	378865	None
PD1-02/SW01Rep2	378855	Zinc			

- **Arsenic, cadmium, and lead** – No detections of arsenic, cadmium, or lead were noted in the aqueous method blanks.
 - **General Chemistry (COD, alkalinity, nitrate, chloride, sulfate, and TOC)** – No detections of the general chemistry parameters were noted in the aqueous method blanks.
6. Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD):
- **Metals (Arsenic, cadmium, lead, and zinc)** – All LCS/LCSD results were within QC limits.
 - **TOC** – The TOC recovery for the LCS that was associated with Lab ID Numbers 378845 to 378866 was slightly below QC limits. Since the recovery of the LCSD and MS were within limits, no data qualifiers were needed.
 - **General Chemistry (COD, alkalinity, nitrate, chloride, and sulfate)** - All LCS/LCSD results were within QC limits.
7. Matrix Spike (MS)/Matrix Spike Duplicate (MSD):
- **PD1-02/SW01** – The laboratory used Sample PD1-02/SW01 (Lab ID 378853) as the MS sample. The spike amount for TOC was less than one-fourth of the original, unspiked concentration for Sample PD1-02/SW01. As such, no conclusion regarding the accuracy of the TOC results could be made using this MS. Instead accuracy was assessed using the LCS results.
 - **PD1-02A/SW01** – The laboratory used Sample PD1-02A/SW01 (Lab ID 383131) as the MS/MSD sample. The spike amount for zinc was less than one-fourth of the original, unspiked concentration for Sample PD1-02A/SW01. As such, no conclusion regarding the accuracy or precision of the zinc results could be made using this MS/MSD. Instead accuracy and precision were assessed using the LCS/LCSD results.
 - **PZ-09/GW01** - The laboratory used Sample PZ-09/GW01 (Lab ID 383128) as the MS/MSD sample. The spike amount for sulfate and zinc were less than one-fourth of the original, unspiked concentration for Sample PZ-09/GW01. As such, no conclusion regarding the accuracy of the sulfate and zinc results could be made using this MS. Instead accuracy was assessed using the LCS results.
 - **MW-4/GW01** - The laboratory used Sample MW-4/GW01 (Lab ID 384392) as the MS/MSD sample. The spike amount for zinc was less than one-fourth of the original, unspiked concentration for Sample MW-4/GW01. As such, no conclusion regarding the accuracy or precision of the zinc results could be made using this MS/MSD. Instead accuracy and precision were assessed using the LCS/LCSD results.

- **OFF-04/SW01** – No problems were noted with the MS/MSD performed using OFF-04/SW01.
8. Laboratory Duplicates: Laboratory duplicates were provided for the general chemistry analyses.
- **PD1-02/SW01** – The laboratory used Sample PD1-02/SW01 (Lab ID 378853) as the laboratory duplicate sample. The relative percent difference (RPD) for COD exceeded the QC criteria, indicating a potential precision problem with the data. This sample was also analyzed in triplicate as Samples PD1-02/SW01, PD1-02/SW01Rep1, and PD1-02/SW01Rep2 with adequate replication. Since the triplicate sample data was acceptable, no data required qualification.
 - **OFF-04/SW01, OFF-09/SW01, PD1-02A/SW01, PZ-09/GW01, and MW-4/GW01** – No problems were noted with the laboratory duplicate analyses that were performed using the listed samples.
9. Field Duplicates: The following samples were collected and analyzed in duplicate or triplicate:
- BG-OFF-01/SW01 and BG-OFF-1000/SW01 (Table 3) – All data were adequately replicated.
 - PD1/SW02, PD1-02/SW01Rep1, and PD1-02/SW01Rep2 (Table 4) – Nitrate as nitrogen was not detected in two of the samples, but was detected in the third. With this exception all other data were adequately replicated.
 - PD3-01/SW01 and PD3-1000/SW01 (Table 5) – Lead and zinc were not detected in the primary sample but were detected in the duplicate, indicating a replication failure. The discrepancies were potentially caused by turbidity in the samples.
 - OFF-04/SW01, OFF-04/SW01Rep1, and OFF-04/SW01Rep2 (Table 6) – Elevated RPDs were noted for zinc and nitrate as nitrogen.
 - SMP-03/SW01 and SMP-1000/SW01 (Table 7) - All data were adequately replicated.
 - PZ-09/GW01 and PZ-1001/GW01 (Table 8) – Elevated RPDs were noted for cadmium, lead, and zinc. Limited groundwater was noted within most of the piezometers. The discrepancies were potentially caused by turbidity in the samples.
 - MW-3/GW01 and MW-1000/GW01 (Table 9) – Elevated RPDs were noted for lead, zinc, and COD. Limited groundwater was noted within most of the monitoring wells. The discrepancies were potentially caused by turbidity in the samples.
10. Sample Dilution and Reporting Limits: No dilutions were reported by the laboratory.
11. Laboratory Completeness: Samples were analyzed as requested. A total of 391 parameter data points were generated for these data packages. The TOC result for one sample was rejected (R) due gross exceedence of the holding time. Laboratory completeness was 99.7%.
12. Data Qualification Summary: See attached Table 2 for a summary of sample results and data qualifiers applied during the course of the review.

Attachments

Table 1 – Sample Collection Summary

Table 2 – Data Qualifiers

Table 3 – Field Duplicate Results – BG-OFF-01/SW01 and BG-OFF-1000/SW01

Table 4 – Field Duplicate Results – PD1-02/SW01, PD1-02/SW01Rep1, and PD1-02/SW01Rep2

Table 5 – Field Duplicate Results – PD3-01/SW01 and PD3-1000/SW01

Table 6 – Field Duplicate Results – OFF-04/SW01, OFF-04/SW01Rep1, and OFF-04/SW01Rep2

Table 7 – Field Duplicate Results – SMP-03/SW01 and SMP-1000/SW01

Table 8 – Field Duplicate Results – PZ-09/GW01 and PZ-1000/GW01

Table 9 – Field Duplicate Results – MW-03/GW01 and MW-100/GW01

Table 1
Sample Collection Summary
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals	Filtered Metals	General Chemistry
Rinsate-01	7/19/2005	W1	W1-001	See Analysis	Water	Rinse Blank of Ponar Sediment Sampling Device	378844		
Rinsate-02	7/20/2005	W1	W1-023	See Analysis	Water	Rinse Blank of Sampling Spoon	378866		
BG-OFF-01/SW01	9/29/2005	W7	W7-001	See Analysis	Surface Water		384387		384387
BG-OFF-1000/SW01	9/29/2005	W7	W7-002	See Analysis	Surface Water	Duplicate of BG-OFF-01/SW01	384388		384388
BG-OFF-02/SW01	9/13/2005	W6	W6-010	See Analysis	Surface Water		383129		383129
PD1-01/SW01	7/20/2005	W1	W1-009	See Analysis	Surface Water		378852		378852
PD1-02/SW01	7/20/2005	W1	W1-010	See Analysis	Surface Water		378853		378853
PD1-02/SW01Rep1	7/20/2005	W1	W1-011	See Analysis	Surface Water	Marked as MS on COC, lab provided unspiked data	378854		378854
PD1-02/SW01Rep2	7/20/2005	W1	W1-012	See Analysis	Surface Water	Marked as MSD on COC, lab provided unspiked data	378855		378855
PD1-02A/SW01	9/13/2005	W6	W6-012	See Analysis	Surface Water		383131		383131
PD1-03/SW01	7/20/2005	W1	W1-013	See Analysis	Surface Water		378856		378856
PD2-01/SW01	7/20/2005	W1	W1-015	See Analysis	Surface Water		378858		378858
PD2-02/SW01	7/20/2005	W1	W1-014	See Analysis	Surface Water		378857		378857
PD3-01/SW01	7/20/2005	W1	W1-016	See Analysis	Surface Water		378859		378859
PD3-1000/SW01	7/20/2005	W1	W1-017	See Analysis	Surface Water	Duplicate of PD3-01/SW01	378860		378860
PD3-02/SW01	7/20/2005	W1	W1-018	See Analysis	Surface Water		378861		378861
OFF-02/SW01	7/20/2005	W1	W1-019	See Analysis	Surface Water		378862		378862
OFF-04/SW01	7/20/2005	W1	W1-020	See Analysis	Surface Water		378863		378863
OFF-04/SW01Rep1	7/20/2005	W1	W1-021	See Analysis	Surface Water	Marked as MS on COC, lab provided unspiked data	378864		378864
OFF-04/SW01Rep2	7/20/2005	W1	W1-022	See Analysis	Surface Water	Marked as MSD on COC, lab provided unspiked data	378865		378865
OFF-09/SW01	7/21/2005	W2	W2-001	See Analysis	Surface Water		379557		379557
SMP-01/SW01	7/19/2005	W1	W1-008	See Analysis	Surface Water		378851		378851
SMP-02/SW01	7/19/2005	W1	W1-007	See Analysis	Surface Water		378850		378850
SMP-03/SW01	7/19/2005	W1	W1-005	See Analysis	Surface Water		378848		378848
SMP-1000/SW01	7/19/2005	W1	W1-006	See Analysis	Surface Water	Duplicate of SMP-03/SW01	378849		378849

Table 1
Sample Collection Summary
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals	Filtered Metals	General Chemistry
SMP-04/SW01	7/19/2005	W1	W1-004	See Analysis	Surface Water		378847		378847
SMP-05/ SW01	7/19/2005	W1	W1-003	See Analysis	Surface Water		378846		378846
SMP-06/SW01	7/19/2005	W1	W1-002	See Analysis	Surface Water		378845		378845
PZ-01/GW01	9/13/2005	W6	W6-001	See Analysis	Temp Piezometer	Insufficient water for general chemistry analysis	383120		
PZ-02/GW01	9/13/2005	W6	W6-002	See Analysis	Temp Piezometer	Insufficient water for general chemistry analysis	383121		
PZ-03/GW01	9/13/2005	W6	W6-003	See Analysis	Temp Piezometer	Only enough water for TOC in general chemisty list	383122		383122
PZ-04/GW01	9/13/2005	W6	W6-004	See Analysis	Temp Piezometer	Only enough water for TOC in general chemisty list	383123		383123
PZ-05/GW01	9/13/2005	W6	W6-005	See Analysis	Temp Piezometer	Insufficient water for general chemistry analysis	383124		
PZ-06/GW01	9/13/2005	W6	W6-006	See Analysis	Temp Piezometer	Insufficient water for general chemistry analysis	383125		
PZ-07/GW01	9/13/2005	W6	W6-007	See Analysis	Temp Piezometer		383126		383126
PZ-08/GW01	9/13/2005	W6	W6-008	See Analysis	Temp Piezometer	Only enough water for TOC in general chemisty list	383127		383127
PZ-09/GW01	9/13/2005	W6	W6-009	See Analysis	Temp Piezometer		383128		383128
PZ-1001/GW01	9/13/2005	W6	W6-011	See Analysis	Temp Piezometer	Duplicate of PZ-09/GW01	383130		383130
MW-01/GW01	9/29/2005	W7	W7-003	See Analysis	Monitoring Well		384389		384389
MW-02/GW01	9/29/2005	W7	W7-004	See Analysis	Monitoring Well	Insufficient water for general chemistry analysis	384390		
MW-03/GW01	9/29/2005	W7	W7-005	See Analysis	Monitoring Well		384391		384391
MW-04/GW01	9/29/2005	W7	W7-006	See Analysis	Monitoring Well		384392		384392
MW-05/GW01	9/29/2005	W7	W7-007	See Analysis	Monitoring Well		384394	384393	
MW-1000/GW01	9/29/2005	W7	W7-008	See Analysis	Monitoring Well	Duplicate of MW-03/GW01	384395		384395
RW-01/GW01	10/3/2005	W8	W8-001	See Analysis	Residential Well		384442		384442

COC = Chain-of-Custody Form
MS = Matrix Spike
MSD = Matrix Spike Duplicate
Temp = Temporary
TOC = Total Organic Carbon

Table 2
Data Qualifiers
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
BG-OFF-01/SW01	9/29/2005	W7-001	METAL	Arsenic, Total	ug/L	10	U	
BG-OFF-01/SW01	9/29/2005	W7-001	METAL	Cadmium, Total	ug/L	5	U	
BG-OFF-01/SW01	9/29/2005	W7-001	METAL	Lead, Total	ug/L	10	U	
BG-OFF-01/SW01	9/29/2005	W7-001	METAL	Zinc, Total	ug/L	5	U	
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Alkalinity, Total	mg/L	122		
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Chemical Oxygen Demand	mg/L	47.6		
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Chloride	mg/L	23.1		
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Sulfate	mg/L	15.9		
BG-OFF-01/SW01	9/29/2005	W7-001	WQUAL	Total Organic Carbon	mg/L	14.4		
BG-OFF-1000/SW01	9/29/2005	W7-002	METAL	Arsenic, Total	ug/L	10	U	
BG-OFF-1000/SW01	9/29/2005	W7-002	METAL	Cadmium, Total	ug/L	5	U	
BG-OFF-1000/SW01	9/29/2005	W7-002	METAL	Lead, Total	ug/L	10	U	
BG-OFF-1000/SW01	9/29/2005	W7-002	METAL	Zinc, Total	ug/L	5	U	
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Alkalinity, Total	mg/L	122		
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Chemical Oxygen Demand	mg/L	51.1		
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Chloride	mg/L	22.9		
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Sulfate	mg/L	19.5		
BG-OFF-1000/SW01	9/29/2005	W7-002	WQUAL	Total Organic Carbon	mg/L	14.4		
BG-OFF-02/SW01	9/13/2005	W6-010	METAL	Arsenic, Total	ug/L	10	U	
BG-OFF-02/SW01	9/13/2005	W6-010	METAL	Cadmium, Total	ug/L	5	U	
BG-OFF-02/SW01	9/13/2005	W6-010	METAL	Lead, Total	ug/L	10	U	
BG-OFF-02/SW01	9/13/2005	W6-010	METAL	Zinc, Total	ug/L	5	U	
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Alkalinity, Total	mg/L	99.6		
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Chemical Oxygen Demand	mg/L	23.4		
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Chloride	mg/L	10		
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Sulfate	mg/L	17.7		
BG-OFF-02/SW01	9/13/2005	W6-010	WQUAL	Total Organic Carbon	mg/L	5.96		
OFF-02/SW01	7/20/2005	W1-019	METAL	Arsenic, Total	ug/L	10	U	
OFF-02/SW01	7/20/2005	W1-019	METAL	Cadmium, Total	ug/L	5	U	
OFF-02/SW01	7/20/2005	W1-019	METAL	Lead, Total	ug/L	26		
OFF-02/SW01	7/20/2005	W1-019	METAL	Zinc, Total	ug/L	186		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Alkalinity, Total	mg/L	241		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Chemical Oxygen Demand	mg/L	24.8		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Chloride	mg/L	17.7		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Nitrogen, Nitrate as N	mg/L	2.05		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Sulfate	mg/L	263		
OFF-02/SW01	7/20/2005	W1-019	WQUAL	Total Organic Carbon	mg/L	4.4		
OFF-04/SW01	7/20/2005	W1-020	METAL	Arsenic, Total	ug/L	10	U	
OFF-04/SW01	7/20/2005	W1-020	METAL	Cadmium, Total	ug/L	5	U	
OFF-04/SW01	7/20/2005	W1-020	METAL	Lead, Total	ug/L	15		
OFF-04/SW01	7/20/2005	W1-020	METAL	Zinc, Total	ug/L	290		
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Alkalinity, Total	mg/L	246		
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Chemical Oxygen Demand	mg/L	50.5		
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Chloride	mg/L	17.7		

Table 2
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Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Nitrogen, Nitrate as N	mg/L	0.85		
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Sulfate	mg/L	252		
OFF-04/SW01	7/20/2005	W1-020	WQUAL	Total Organic Carbon	mg/L	5.73		
OFF-04/SW01Rep1	7/20/2005	W1-021	METAL	Arsenic, Total	ug/L	10	U	
OFF-04/SW01Rep1	7/20/2005	W1-021	METAL	Cadmium, Total	ug/L	5	U	
OFF-04/SW01Rep1	7/20/2005	W1-021	METAL	Lead, Total	ug/L	15		
OFF-04/SW01Rep1	7/20/2005	W1-021	METAL	Zinc, Total	ug/L	359		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Alkalinity, Total	mg/L	237		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Chemical Oxygen Demand	mg/L	60.5		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Chloride	mg/L	17.8		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Nitrogen, Nitrate as N	mg/L	3.27		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Sulfate	mg/L	254		
OFF-04/SW01Rep1	7/20/2005	W1-021	WQUAL	Total Organic Carbon	mg/L	5.78		
OFF-04/SW01Rep2	7/20/2005	W1-022	METAL	Arsenic, Total	ug/L	10	U	
OFF-04/SW01Rep2	7/20/2005	W1-022	METAL	Cadmium, Total	ug/L	5	U	
OFF-04/SW01Rep2	7/20/2005	W1-022	METAL	Lead, Total	ug/L	12		
OFF-04/SW01Rep2	7/20/2005	W1-022	METAL	Zinc, Total	ug/L	238		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Alkalinity, Total	mg/L	244		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Chemical Oxygen Demand	mg/L	50		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Chloride	mg/L	17.8		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Nitrogen, Nitrate as N	mg/L	0.48		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Sulfate	mg/L	260		
OFF-04/SW01Rep2	7/20/2005	W1-022	WQUAL	Total Organic Carbon	mg/L	5.16		
OFF-09/SW01	7/21/2005	W2-001	METAL	Arsenic, Total	ug/L	149		
OFF-09/SW01	7/21/2005	W2-001	METAL	Cadmium, Total	ug/L	810		
OFF-09/SW01	7/21/2005	W2-001	METAL	Lead, Total	ug/L	2560		
OFF-09/SW01	7/21/2005	W2-001	METAL	Zinc, Total	ug/L	61300		
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Alkalinity, Total	mg/L	245		
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Chemical Oxygen Demand	mg/L	165		
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Chloride	mg/L	13.2		J-
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Nitrogen, Nitrate as N	mg/L	5.81		
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Sulfate	mg/L	19.7		J-
OFF-09/SW01	7/21/2005	W2-001	WQUAL	Total Organic Carbon	mg/L	46.9		R
PD1-01/SW01	7/20/2005	W1-009	METAL	Arsenic, Total	ug/L	10	U	
PD1-01/SW01	7/20/2005	W1-009	METAL	Cadmium, Total	ug/L	5	U	
PD1-01/SW01	7/20/2005	W1-009	METAL	Lead, Total	ug/L	10	U	
PD1-01/SW01	7/20/2005	W1-009	METAL	Zinc, Total	ug/L	64		U*
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Alkalinity, Total	mg/L	123		
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Chemical Oxygen Demand	mg/L	159		
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Chloride	mg/L	16.4		
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Sulfate	mg/L	11		
PD1-01/SW01	7/20/2005	W1-009	WQUAL	Total Organic Carbon	mg/L	17.8		
PD1-02/SW01	7/20/2005	W1-010	METAL	Arsenic, Total	ug/L	10	U	
PD1-02/SW01	7/20/2005	W1-010	METAL	Cadmium, Total	ug/L	5	U	
PD1-02/SW01	7/20/2005	W1-010	METAL	Lead, Total	ug/L	10	U	

Table 2
Data Qualifiers
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Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
PD1-02/SW01	7/20/2005	W1-010	METAL	Zinc, Total	ug/L	33		U*
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Alkalinity, Total	mg/L	134		
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Chemical Oxygen Demand	mg/L	53		
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Chloride	mg/L	16.4		
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Sulfate	mg/L	10	U	
PD1-02/SW01	7/20/2005	W1-010	WQUAL	Total Organic Carbon	mg/L	14.7		
PD1-02/SW01Rep1	7/20/2005	W1-011	METAL	Arsenic, Total	ug/L	10	U	
PD1-02/SW01Rep1	7/20/2005	W1-011	METAL	Cadmium, Total	ug/L	5	U	
PD1-02/SW01Rep1	7/20/2005	W1-011	METAL	Lead, Total	ug/L	10	U	
PD1-02/SW01Rep1	7/20/2005	W1-011	METAL	Zinc, Total	ug/L	33		U*
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Alkalinity, Total	mg/L	131		
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Chemical Oxygen Demand	mg/L	54.5		
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Chloride	mg/L	16.4		
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Nitrogen, Nitrate as N	mg/L	0.65		
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Sulfate	mg/L	10	U	
PD1-02/SW01Rep1	7/20/2005	W1-011	WQUAL	Total Organic Carbon	mg/L	14.7		
PD1-02/SW01Rep2	7/20/2005	W1-012	METAL	Arsenic, Total	ug/L	10	U	
PD1-02/SW01Rep2	7/20/2005	W1-012	METAL	Cadmium, Total	ug/L	5	U	
PD1-02/SW01Rep2	7/20/2005	W1-012	METAL	Lead, Total	ug/L	10	U	
PD1-02/SW01Rep2	7/20/2005	W1-012	METAL	Zinc, Total	ug/L	51		U*
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Alkalinity, Total	mg/L	135		
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Chemical Oxygen Demand	mg/L	53.5		
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Chloride	mg/L	16.5		
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Sulfate	mg/L	10	U	
PD1-02/SW01Rep2	7/20/2005	W1-012	WQUAL	Total Organic Carbon	mg/L	14.5		
PD1-02A/SW01	9/13/2005	W6-012	METAL	Arsenic, Total	ug/L	10	U	
PD1-02A/SW01	9/13/2005	W6-012	METAL	Cadmium, Total	ug/L	37		
PD1-02A/SW01	9/13/2005	W6-012	METAL	Lead, Total	ug/L	56		
PD1-02A/SW01	9/13/2005	W6-012	METAL	Zinc, Total	ug/L	1250		
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Alkalinity, Total	mg/L	147		
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Chemical Oxygen Demand	mg/L	61.4		
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Chloride	mg/L	22.3		
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Sulfate	mg/L	22.7		
PD1-02A/SW01	9/13/2005	W6-012	WQUAL	Total Organic Carbon	mg/L	42.3		
PD1-03/SW01	7/20/2005	W1-013	METAL	Arsenic, Total	ug/L	10	U	
PD1-03/SW01	7/20/2005	W1-013	METAL	Cadmium, Total	ug/L	5	U	
PD1-03/SW01	7/20/2005	W1-013	METAL	Lead, Total	ug/L	10	U	
PD1-03/SW01	7/20/2005	W1-013	METAL	Zinc, Total	ug/L	63		U*
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Alkalinity, Total	mg/L	132		
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Chemical Oxygen Demand	mg/L	73.8		
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Chloride	mg/L	16.1		
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Nitrogen, Nitrate as N	mg/L	0.16		
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Sulfate	mg/L	10	U	
PD1-03/SW01	7/20/2005	W1-013	WQUAL	Total Organic Carbon	mg/L	15.4		

Table 2
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Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
PD2-01/SW01	7/20/2005	W1-015	METAL	Arsenic, Total	ug/L	10	U	
PD2-01/SW01	7/20/2005	W1-015	METAL	Cadmium, Total	ug/L	22		
PD2-01/SW01	7/20/2005	W1-015	METAL	Lead, Total	ug/L	17		
PD2-01/SW01	7/20/2005	W1-015	METAL	Zinc, Total	ug/L	299		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Alkalinity, Total	mg/L	240		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Chemical Oxygen Demand	mg/L	351		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Chloride	mg/L	28.9		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Nitrogen, Nitrate as N	mg/L	0.07		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Sulfate	mg/L	10		
PD2-01/SW01	7/20/2005	W1-015	WQUAL	Total Organic Carbon	mg/L	46.9		
PD2-02/SW01	7/20/2005	W1-014	METAL	Arsenic, Total	ug/L	17		
PD2-02/SW01	7/20/2005	W1-014	METAL	Cadmium, Total	ug/L	12		
PD2-02/SW01	7/20/2005	W1-014	METAL	Lead, Total	ug/L	75		
PD2-02/SW01	7/20/2005	W1-014	METAL	Zinc, Total	ug/L	781		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Alkalinity, Total	mg/L	210		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Chemical Oxygen Demand	mg/L	107		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Chloride	mg/L	37.7		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Nitrogen, Nitrate as N	mg/L	0.5		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Sulfate	mg/L	20.3		
PD2-02/SW01	7/20/2005	W1-014	WQUAL	Total Organic Carbon	mg/L	25.5		
PD3-01/SW01	7/20/2005	W1-016	METAL	Arsenic, Total	ug/L	10	U	
PD3-01/SW01	7/20/2005	W1-016	METAL	Cadmium, Total	ug/L	5	U	
PD3-01/SW01	7/20/2005	W1-016	METAL	Lead, Total	ug/L	10	U	
PD3-01/SW01	7/20/2005	W1-016	METAL	Zinc, Total	ug/L	67		U*
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Alkalinity, Total	mg/L	178		
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Chemical Oxygen Demand	mg/L	111		
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Chloride	mg/L	24.2		
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Sulfate	mg/L	10	U	
PD3-01/SW01	7/20/2005	W1-016	WQUAL	Total Organic Carbon	mg/L	16.2		
PD3-1000/SW01	7/20/2005	W1-017	METAL	Arsenic, Total	ug/L	10	U	
PD3-1000/SW01	7/20/2005	W1-017	METAL	Cadmium, Total	ug/L	8		
PD3-1000/SW01	7/20/2005	W1-017	METAL	Lead, Total	ug/L	30		
PD3-1000/SW01	7/20/2005	W1-017	METAL	Zinc, Total	ug/L	375		
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Alkalinity, Total	mg/L	177		
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Chemical Oxygen Demand	mg/L	104		
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Chloride	mg/L	24.3		
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Sulfate	mg/L	10	U	
PD3-1000/SW01	7/20/2005	W1-017	WQUAL	Total Organic Carbon	mg/L	17.7		
PD3-02/SW01	7/20/2005	W1-018	METAL	Arsenic, Total	ug/L	10	U	
PD3-02/SW01	7/20/2005	W1-018	METAL	Cadmium, Total	ug/L	5	U	
PD3-02/SW01	7/20/2005	W1-018	METAL	Lead, Total	ug/L	10	U	
PD3-02/SW01	7/20/2005	W1-018	METAL	Zinc, Total	ug/L	28		U*
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Alkalinity, Total	mg/L	147		
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Chemical Oxygen Demand	mg/L	61.4		

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Aqueous Samples
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Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Chloride	mg/L	22.8		
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Sulfate	mg/L	10	U	
PD3-02/SW01	7/20/2005	W1-018	WQUAL	Total Organic Carbon	mg/L	10.9		
SMP-01/SW01	7/19/2005	W1-008	METAL	Arsenic, Total	ug/L	10	U	
SMP-01/SW01	7/19/2005	W1-008	METAL	Cadmium, Total	ug/L	5	U	
SMP-01/SW01	7/19/2005	W1-008	METAL	Lead, Total	ug/L	10	U	
SMP-01/SW01	7/19/2005	W1-008	METAL	Zinc, Total	ug/L	5	U	
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Alkalinity, Total	mg/L	160		
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Chemical Oxygen Demand	mg/L	13.4		
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Chloride	mg/L	23.8		
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Sulfate	mg/L	693		
SMP-01/SW01	7/19/2005	W1-008	WQUAL	Total Organic Carbon	mg/L	5.24		
SMP-02/SW01	7/19/2005	W1-007	METAL	Arsenic, Total	ug/L	10	U	
SMP-02/SW01	7/19/2005	W1-007	METAL	Cadmium, Total	ug/L	5	U	
SMP-02/SW01	7/19/2005	W1-007	METAL	Lead, Total	ug/L	10	U	
SMP-02/SW01	7/19/2005	W1-007	METAL	Zinc, Total	ug/L	5	U	
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Alkalinity, Total	mg/L	159		
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Chemical Oxygen Demand	mg/L	20.8		
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Chloride	mg/L	23.5		
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Sulfate	mg/L	714		
SMP-02/SW01	7/19/2005	W1-007	WQUAL	Total Organic Carbon	mg/L	5.23		
SMP-03/SW01	7/19/2005	W1-005	METAL	Arsenic, Total	ug/L	10	U	
SMP-03/SW01	7/19/2005	W1-005	METAL	Cadmium, Total	ug/L	5	U	
SMP-03/SW01	7/19/2005	W1-005	METAL	Lead, Total	ug/L	10	U	
SMP-03/SW01	7/19/2005	W1-005	METAL	Zinc, Total	ug/L	5	U	
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Alkalinity, Total	mg/L	158		
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Chemical Oxygen Demand	mg/L	21.3		
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Chloride	mg/L	23.7		
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Sulfate	mg/L	743		
SMP-03/SW01	7/19/2005	W1-005	WQUAL	Total Organic Carbon	mg/L	5.09		
SMP-1000/SW01	7/19/2005	W1-006	METAL	Arsenic, Total	ug/L	10	U	
SMP-1000/SW01	7/19/2005	W1-006	METAL	Cadmium, Total	ug/L	5	U	
SMP-1000/SW01	7/19/2005	W1-006	METAL	Lead, Total	ug/L	10	U	
SMP-1000/SW01	7/19/2005	W1-006	METAL	Zinc, Total	ug/L	5	U	
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Alkalinity, Total	mg/L	158		
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Chemical Oxygen Demand	mg/L	26.3		
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Chloride	mg/L	23.5		
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Sulfate	mg/L	739		
SMP-1000/SW01	7/19/2005	W1-006	WQUAL	Total Organic Carbon	mg/L	5.24		
SMP-04/SW01	7/19/2005	W1-004	METAL	Arsenic, Total	ug/L	10	U	
SMP-04/SW01	7/19/2005	W1-004	METAL	Cadmium, Total	ug/L	5	U	

Table 2
Data Qualifiers
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
SMP-04/SW01	7/19/2005	W1-004	METAL	Lead, Total	ug/L	10	U	
SMP-04/SW01	7/19/2005	W1-004	METAL	Zinc, Total	ug/L	5		U*
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Alkalinity, Total	mg/L	160		
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Chemical Oxygen Demand	mg/L	25.8		
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Chloride	mg/L	23.6		
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Sulfate	mg/L	703		
SMP-04/SW01	7/19/2005	W1-004	WQUAL	Total Organic Carbon	mg/L	5.18		
SMP-05/SW01	7/19/2005	W1-003	METAL	Arsenic, Total	ug/L	10	U	
SMP-05/SW01	7/19/2005	W1-003	METAL	Cadmium, Total	ug/L	5	U	
SMP-05/SW01	7/19/2005	W1-003	METAL	Lead, Total	ug/L	10	U	
SMP-05/SW01	7/19/2005	W1-003	METAL	Zinc, Total	ug/L	5	U	
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Alkalinity, Total	mg/L	159		
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Chemical Oxygen Demand	mg/L	23.3		
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Chloride	mg/L	23.7		
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Sulfate	mg/L	714		
SMP-05/SW01	7/19/2005	W1-003	WQUAL	Total Organic Carbon	mg/L	5.14		
SMP-06/SW01	7/19/2005	W1-002	METAL	Arsenic, Total	ug/L	10	U	
SMP-06/SW01	7/19/2005	W1-002	METAL	Cadmium, Total	ug/L	5	U	
SMP-06/SW01	7/19/2005	W1-002	METAL	Lead, Total	ug/L	10	U	
SMP-06/SW01	7/19/2005	W1-002	METAL	Zinc, Total	ug/L	5	U	
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Alkalinity, Total	mg/L	158		
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Chemical Oxygen Demand	mg/L	23.8		
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Chloride	mg/L	23.5		
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Sulfate	mg/L	712		
SMP-06/SW01	7/19/2005	W1-002	WQUAL	Total Organic Carbon	mg/L	4.95		
PZ-01/GW01	9/13/2005	W6-001	METAL	Arsenic, Total	ug/L	17		
PZ-01/GW01	9/13/2005	W6-001	METAL	Cadmium, Total	ug/L	18		
PZ-01/GW01	9/13/2005	W6-001	METAL	Lead, Total	ug/L	607		
PZ-01/GW01	9/13/2005	W6-001	METAL	Zinc, Total	ug/L	1940		
PZ-02/GW01	9/13/2005	W6-002	METAL	Arsenic, Total	ug/L	10	U	
PZ-02/GW01	9/13/2005	W6-002	METAL	Cadmium, Total	ug/L	5	U	
PZ-02/GW01	9/13/2005	W6-002	METAL	Lead, Total	ug/L	12		
PZ-02/GW01	9/13/2005	W6-002	METAL	Zinc, Total	ug/L	86		
PZ-03/GW01	9/13/2005	W6-003	METAL	Arsenic, Total	ug/L	10	U	
PZ-03/GW01	9/13/2005	W6-003	METAL	Cadmium, Total	ug/L	5	U	
PZ-03/GW01	9/13/2005	W6-003	METAL	Lead, Total	ug/L	40		
PZ-03/GW01	9/13/2005	W6-003	METAL	Zinc, Total	ug/L	213		
PZ-03/GW01	9/13/2005	W6-003	WQUAL	Total Organic Carbon	mg/L	3.5		
PZ-04/GW01	9/13/2005	W6-004	METAL	Arsenic, Total	ug/L	10	U	
PZ-04/GW01	9/13/2005	W6-004	METAL	Cadmium, Total	ug/L	5	U	
PZ-04/GW01	9/13/2005	W6-004	METAL	Lead, Total	ug/L	31		
PZ-04/GW01	9/13/2005	W6-004	METAL	Zinc, Total	ug/L	183		

Table 2
Data Qualifiers
Aqueous Samples
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Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
PZ-04/GW01	9/13/2005	W6-004	WQUAL	Total Organic Carbon	mg/L	3.04		
PZ-05/GW01	9/13/2005	W6-005	METAL	Arsenic, Total	ug/L	10	U	
PZ-05/GW01	9/13/2005	W6-005	METAL	Cadmium, Total	ug/L	5	U	
PZ-05/GW01	9/13/2005	W6-005	METAL	Lead, Total	ug/L	10	U	
PZ-05/GW01	9/13/2005	W6-005	METAL	Zinc, Total	ug/L	78		
PZ-06/GW01	9/13/2005	W6-006	METAL	Arsenic, Total	ug/L	10	U	
PZ-06/GW01	9/13/2005	W6-006	METAL	Cadmium, Total	ug/L	8		
PZ-06/GW01	9/13/2005	W6-006	METAL	Lead, Total	ug/L	59		
PZ-06/GW01	9/13/2005	W6-006	METAL	Zinc, Total	ug/L	928		
PZ-07/GW01	9/13/2005	W6-007	METAL	Arsenic, Total	ug/L	17		
PZ-07/GW01	9/13/2005	W6-007	METAL	Cadmium, Total	ug/L	99		
PZ-07/GW01	9/13/2005	W6-007	METAL	Lead, Total	ug/L	946		
PZ-07/GW01	9/13/2005	W6-007	METAL	Zinc, Total	ug/L	3880		
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Alkalinity, Total	mg/L	367		
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Chemical Oxygen Demand	mg/L	93.1		
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Chloride	mg/L	10	U	
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Nitrogen, Nitrate as N	mg/L	0.18		
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Sulfate	mg/L	944		
PZ-07/GW01	9/13/2005	W6-007	WQUAL	Total Organic Carbon	mg/L	4.34		
PZ-08/GW01	9/13/2005	W6-008	METAL	Arsenic, Total	ug/L	10	U	
PZ-08/GW01	9/13/2005	W6-008	METAL	Cadmium, Total	ug/L	20		
PZ-08/GW01	9/13/2005	W6-008	METAL	Lead, Total	ug/L	148		
PZ-08/GW01	9/13/2005	W6-008	METAL	Zinc, Total	ug/L	1030		
PZ-08/GW01	9/13/2005	W6-008	WQUAL	Total Organic Carbon	mg/L	5.33		
PZ-09/GW01	9/13/2005	W6-009	METAL	Arsenic, Total	ug/L	12		
PZ-09/GW01	9/13/2005	W6-009	METAL	Cadmium, Total	ug/L	178		
PZ-09/GW01	9/13/2005	W6-009	METAL	Lead, Total	ug/L	371		
PZ-09/GW01	9/13/2005	W6-009	METAL	Zinc, Total	ug/L	8920		
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Alkalinity, Total	mg/L	184		
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Chloride	mg/L	10.7		
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Nitrogen, Nitrate as N	mg/L	0.11		
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Sulfate	mg/L	367		
PZ-09/GW01	9/13/2005	W6-009	WQUAL	Total Organic Carbon	mg/L	1.23		
PZ-1001/GW01	9/13/2005	W6-011	METAL	Arsenic, Total	ug/L	10	U	
PZ-1001/GW01	9/13/2005	W6-011	METAL	Cadmium, Total	ug/L	133		
PZ-1001/GW01	9/13/2005	W6-011	METAL	Lead, Total	ug/L	25		
PZ-1001/GW01	9/13/2005	W6-011	METAL	Zinc, Total	ug/L	6520		
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Alkalinity, Total	mg/L	183		
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Chloride	mg/L	10.6		
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Nitrogen, Nitrate as N	mg/L	0.12		
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Sulfate	mg/L	363		
PZ-1001/GW01	9/13/2005	W6-011	WQUAL	Total Organic Carbon	mg/L	1.2		

Table 2
Data Qualifiers
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
MW-01/GW01	9/29/2005	W7-003	METAL	Arsenic, Total	ug/L	10	U	
MW-01/GW01	9/29/2005	W7-003	METAL	Cadmium, Total	ug/L	5	U	
MW-01/GW01	9/29/2005	W7-003	METAL	Lead, Total	ug/L	10	U	
MW-01/GW01	9/29/2005	W7-003	METAL	Zinc, Total	ug/L	68		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Alkalinity, Total	mg/L	280		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Chemical Oxygen Demand	mg/L	15.2		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Chloride	mg/L	25		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Nitrogen, Nitrate as N	mg/L	0.3		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Sulfate	mg/L	90.9		
MW-01/GW01	9/29/2005	W7-003	WQUAL	Total Organic Carbon	mg/L	2		
MW-02/GW01	9/29/2005	W7-004	METAL	Arsenic, Total	ug/L	10	U	
MW-02/GW01	9/29/2005	W7-004	METAL	Cadmium, Total	ug/L	5	U	
MW-02/GW01	9/29/2005	W7-004	METAL	Lead, Total	ug/L	10	U	
MW-02/GW01	9/29/2005	W7-004	METAL	Zinc, Total	ug/L	440		
MW-03/GW01	9/29/2005	W7-005	METAL	Arsenic, Total	ug/L	10	U	
MW-03/GW01	9/29/2005	W7-005	METAL	Cadmium, Total	ug/L	5	U	
MW-03/GW01	9/29/2005	W7-005	METAL	Lead, Total	ug/L	87		
MW-03/GW01	9/29/2005	W7-005	METAL	Zinc, Total	ug/L	190		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Alkalinity, Total	mg/L	343		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Chemical Oxygen Demand	mg/L	20.6		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Chloride	mg/L	65.4		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Nitrogen, Nitrate as N	mg/L	0.43		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Sulfate	mg/L	388		
MW-03/GW01	9/29/2005	W7-005	WQUAL	Total Organic Carbon	mg/L	1.76		
MW-1000/GW01	9/29/2005	W7-008	METAL	Arsenic, Total	ug/L	10	U	
MW-1000/GW01	9/29/2005	W7-008	METAL	Cadmium, Total	ug/L	5	U	
MW-1000/GW01	9/29/2005	W7-008	METAL	Lead, Total	ug/L	233		
MW-1000/GW01	9/29/2005	W7-008	METAL	Zinc, Total	ug/L	533		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Alkalinity, Total	mg/L	306		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Chemical Oxygen Demand	mg/L	15.2		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Chloride	mg/L	60		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Nitrogen, Nitrate as N	mg/L	0.41		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Sulfate	mg/L	386		
MW-1000/GW01	9/29/2005	W7-008	WQUAL	Total Organic Carbon	mg/L	1.55		
MW-04/GW01	9/29/2005	W7-006	METAL	Arsenic, Total	ug/L	10	U	
MW-04/GW01	9/29/2005	W7-006	METAL	Cadmium, Total	ug/L	105		
MW-04/GW01	9/29/2005	W7-006	METAL	Lead, Total	ug/L	13		
MW-04/GW01	9/29/2005	W7-006	METAL	Zinc, Total	ug/L	4900		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Alkalinity, Total	mg/L	168		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Chemical Oxygen Demand	mg/L	16.2		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Chloride	mg/L	11		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Nitrogen, Nitrate as N	mg/L	0.08		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Sulfate	mg/L	431		
MW-04/GW01	9/29/2005	W7-006	WQUAL	Total Organic Carbon	mg/L	1.46		
MW-05/GW01	9/29/2005	W7-007	FMET	Arsenic, Filtered	ug/L	10	U	
MW-05/GW01	9/29/2005	W7-007	FMET	Cadmium, Filtered	ug/L	5	U	

Table 2
Data Qualifiers
Aqueous Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Database ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
MW-05/GW01	9/29/2005	W7-007	FMET	Lead, Filtered	ug/L	10	U	
MW-05/GW01	9/29/2005	W7-007	FMET	Zinc, Filtered	ug/L	27		
MW-05/GW01	9/29/2005	W7-007	METAL	Arsenic, Total	ug/L	17		
MW-05/GW01	9/29/2005	W7-007	METAL	Cadmium, Total	ug/L	13		
MW-05/GW01	9/29/2005	W7-007	METAL	Lead, Total	ug/L	58		
MW-05/GW01	9/29/2005	W7-007	METAL	Zinc, Total	ug/L	609		
RW-01/GW01	10/3/2005	W8-001	METAL	Arsenic, Total	ug/L	10	U	
RW-01/GW01	10/3/2005	W8-001	METAL	Cadmium, Total	ug/L	5	U	
RW-01/GW01	10/3/2005	W8-001	METAL	Lead, Total	ug/L	28		
RW-01/GW01	10/3/2005	W8-001	METAL	Zinc, Total	ug/L	1030		
RW-01/GW01	10/3/2005	W8-001	WQUAL	Alkalinity, Total	mg/L	358		
RW-01/GW01	10/3/2005	W8-001	WQUAL	Chemical Oxygen Demand	mg/L	20.6		
RW-01/GW01	10/3/2005	W8-001	WQUAL	Chloride	mg/L	10.7		
RW-01/GW01	10/3/2005	W8-001	WQUAL	Nitrogen, Nitrate as N	mg/L	0.05	U	
RW-01/GW01	10/3/2005	W8-001	WQUAL	Sulfate	mg/L	40.7		
RW-01/GW01	10/3/2005	W8-001	WQUAL	Total Organic Carbon	mg/L	1.73		

J- = Estimated value. Data is potentially biased low.

mg/l = milligrams per liter

ug/l = micrograms per liter

R = Rejected result. Data is not usable.

U = Constituent was not detected. Result listed is the reporting limit.

U* = Qualified as undetected due to blank contamination.

METAL = Metals analysis

FMET = Filtered metals analysis

WQAUL = Water quality / general chemistry analysis

Table
Field Duplicate Results
BG-OFF-01/SW01 and BG-OFF-1000/SW01
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		BG-OFF-01/SW01 9/29/2005	BG-OFF-1000/SW01 9/29/2005	Meets Criteria?
Parameter	Units			
METALS				
Arsenic, Total	ug/L	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	5 U	Yes
Lead, Total	ug/L	10 U	10 U	Yes
Zinc, Total	ug/L	5 U	5 U	Yes
GENERAL CHEMISTRY				
Alkalinity, Total	mg/L	122	122	Yes
Chemical Oxygen Demand	mg/L	47.6	51.1	Yes
Chloride	mg/L	23.1	22.9	Yes
Nitrogen, Nitrate as N	mg/L	0.05 U	0.05 U	Yes
Sulfate	mg/L	15.9	19.5	Yes
Total Organic Carbon	mg/L	14.4	14.4	Yes

ug/L = micrograms per liter

mg/L = milligrams per liter

U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
PD1-02/SW01, PD1-02/SW01Rep1, and PD1-02/SW01Rep2
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		PD1-02/SW01 7/20/2005	PD1-02/SW01Rep1 7/20/2005	PD1-02/SW01Rep2 7/20/2005	Meets Criteria?
Parameter	Units				
METALS					
Arsenic, Total	ug/L	10 U	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	5 U	5 U	Yes
Lead, Total	ug/L	10 U	10 U	10 U	Yes
Zinc, Total	ug/L	33 U*	33 U*	51 U*	Yes
GENERAL CHEMISTRY					
Alkalinity, Total	mg/L	134	131	135	Yes
Chemical Oxygen Demand	mg/L	53	54.5	53.5	Yes
Chloride	mg/L	16.4	16.4	16.5	Yes
Nitrogen, Nitrate as N	mg/L	0.05 U	0.65	0.05 U	No
Sulfate	mg/L	10 U	10 U	10 U	Yes
Total Organic Carbon	mg/L	14.7	14.7	14.5	Yes

ug/L = micrograms per liter

mg/L = mililigrams per liter

U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
PD3-01/SW01 and PD3-1000/SW01
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		PD3-01/SW01 7/20/2005	PD3-1000/SW01 7/20/2005	Meets Criteria?
Parameter	Units			
METALS				
Arsenic, Total	ug/L	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	8	Yes
Lead, Total	ug/L	10 U	30	No (RTF)
Zinc, Total	ug/L	67 U*	375	No (RTF)
GENERAL CHEMISTRY				
Alkalinity, Total	mg/L	178	177	Yes
Chemical Oxygen Demand	mg/L	111	104	Yes
Chloride	mg/L	24.2	24.3	Yes
Nitrogen, Nitrate as N	mg/L	0.05 U	0.05 U	Yes
Sulfate	mg/L	10 U	10 U	Yes
Total Organic Carbon	mg/L	16.2	17.7	Yes

ug/L = micrograms per liter
mg/L = miligrams per liter
RTF = Replication Test Failure
U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
OFF-04/SW01, OFF-04/SW01Rep1, and OFF-04/SW01Rep2
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OFF-04/SW01 7/20/2005	OFF-04/SW01Rep1 7/20/2005	OFF-04/SW01Rep2 7/20/2005	Meets Criteria?
Parameter	Units				
METALS					
Arsenic, Total	ug/L	10 U	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	5 U	5 U	Yes
Lead, Total	ug/L	15	15	12	Yes
Zinc, Total	ug/L	290	359	238	No (RPD = 20 - 40%)
GENERAL CHEMISTRY					
Alkalinity, Total	mg/L	246	237	244	Yes
Chemical Oxygen Demand	mg/L	50.5	60.5	50	Yes
Chloride	mg/L	17.7	17.8	17.8	Yes
Nitrogen, Nitrate as N	mg/L	0.85	3.27	0.48	No (RPD = 56 - 149%)
Sulfate	mg/L	252	254	260	Yes
Total Organic Carbon	mg/L	5.73	5.78	5.16	Yes

ug/L = micrograms per liter

mg/L = milligrams per liter

RPD = Relative Percent Difference

U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
SMP-03/SW01 and SMP-1000/SW01

Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SMP-03/SW01 7/19/2005	SMP-1000/SW01 7/19/2005	Meets Criteria?
Parameter	Units			
METALS				
Arsenic, Total	ug/L	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	5 U	Yes
Lead, Total	ug/L	10 U	10 U	Yes
Zinc, Total	ug/L	5 U	5 U	Yes
GENERAL CHEMISTRY				
Alkalinity, Total	mg/L	158	158	Yes
Chemical Oxygen Demand	mg/L	21.3	26.3	Yes
Chloride	mg/L	23.7	23.5	Yes
Nitrogen, Nitrate as N	mg/L	0.05 U	0.05 U	Yes
Sulfate	mg/L	743	739	Yes
Total Organic Carbon	mg/L	5.09	5.24	Yes

ug/L = micrograms per liter

mg/L = miligrams per liter

U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
PZ-09/GW01 and PZ-1001/GW01
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		PZ-09/GW01 9/13/2005	PZ-1001/GW01 9/13/2005	Meets Criteria?
Parameter	Units			
METALS				
Arsenic, Total	ug/L	12	10 U	Yes
Cadmium, Total	ug/L	178	133	No (RPD=29%)
Lead, Total	ug/L	371	25	No (RPD=175%)
Zinc, Total	ug/L	8920	6520	No (RPD=31%)
GENERAL CHEMISTRY				
Alkalinity, Total	mg/L	184	183	Yes
Chemical Oxygen Demand	mg/L	5 U	5 U	Yes
Chloride	mg/L	10.7	10.6	Yes
Nitrogen, Nitrate as N	mg/L	0.11	0.12	Yes
Sulfate	mg/L	367	363	Yes
Total Organic Carbon	mg/L	1.23	1.2	Yes

ug/L = micrograms per liter

mg/L = mililgrams per liter

RPD = Relative Percent Difference

U = Not Detected. Value is the reporting limit.

Table
Field Duplicate Results
MW-03/GW01 and MW-1000/GW01
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		MW-03/GW01 9/29/2005	MW-1000/GW01 9/29/2005	Meets Criteria?
Parameter	Units			
METALS				
Arsenic, Total	ug/L	10 U	10 U	Yes
Cadmium, Total	ug/L	5 U	5 U	Yes
Lead, Total	ug/L	87	233	No (RPD=91%)
Zinc, Total	ug/L	190	533	No (RPD=95%)
GENERAL CHEMISTRY				
Alkalinity, Total	mg/L	343	306	Yes
Chemical Oxygen Demand	mg/L	20.6	15.2	No (RPD=30%)
Chloride	mg/L	65.4	60	Yes
Nitrogen, Nitrate as N	mg/L	0.43	0.41	Yes
Sulfate	mg/L	388	386	Yes
Total Organic Carbon	mg/L	1.76	1.55	Yes

ug/L = micrograms per liter

mg/L = milligrams per liter

RPD = Relative Percent Difference

U = Not Detected. Value is the reporting limit.

**STL Burlington
RI Phase I**

**Air Sampler Information
SDG 109536**

Data Quality Control Review

Date: August 24 through September 1, 2005

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Shauna Lawrence

Laboratory Information: STL Burlington

208 South Park Drive, Ste 1, Colchester, VT 05446

Phone Number: 802-655-1203

Contact: Don Dawicki, Project Manager

Laboratory Job Number(s):

<u>109536</u>	_____
_____	_____
_____	_____
_____	_____
_____	_____

Signature of Reviewer: Shauna Lawrence

1. Samples and Analyses: See attached Table 1 for the samples and analyses included in this review. All samples were collected as planned. No discrepancies were noted.
2. Chain-of-Custody Documentation: No problems were noted with the chains-of-custody.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): All air samples were analyzed within method holding time.
5. Blanks: Zinc was detected at 16.8 ug/filter in the laboratory blank for the ICP metals analysis. Zinc detections less than five times this lab blank detection were noted for all associated samples. As such, all associated samples were disregarded as false positive and qualified as undetected (U*) for zinc. This included the following associated samples

Sample Name	Lab ID	Sample Name	Lab ID
AQ-1 AR-01 PM10	636657	AQ-2 AR-01 PM10	636671
AQ-1 AR-02 PM10	636658	AQ-2 AR-02 PM10	636672
AQ-1 AR-03 PM10	636659	AQ-2 AR-03 PM10	636673
AQ-1 AR-04 PM10	636660	AQ-2 AR-04 PM10	636674
AQ-1 AR-05 PM10	636661	AQ-2 AR-05 PM10	636675
AQ-1 AR-06 PM10	636662	AQ-2 AR-06 PM10	636676
AQ-1 AR-07 PM10	636663	AQ-2 AR-07 PM10	636677
AR-01 Field Blank	636649	Lab Blank	636678

Additionally, a laboratory-generated blank (Lab Blank) and a field blank (AR-01 Field Blank) were submitted and analyzed with the ICP metals. Zinc was detected at 13.2 B ug/filter (Lab Blank) and 25.1ug/filter (AR-01 Field Blank). However as noted above, these detections were disregarded as false positive due to potential cross contamination. No additional qualifiers were added based on these lab blank or field blank detections.

6. ICP Quality Assurance/Quality Control (QA/QC): To evaluate laboratory preparation, conditions, technique, and/or analysis for the ICP metals, a blank sample was spiked with known concentrations of the metal analytes. The percent recovery (REC) was then determined on this blank and reported as the spike sample recovery. All RECs were within QC limits and no qualifiers were added.
7. Particulate Quality Assurance/Quality Control (QA/QC): To evaluate laboratory preparation, conditions, technique, and/or analysis for the ICP metals, the following QA/QC checks were made for the particulate analyses:
 - Temperature: range within control of ± 3 degrees Celsius ($^{\circ}\text{C}$)
 - Humidity: range within control of ± 5 percent
 - Lab Balance: range within \pm grams allowance
8. Field Duplicates: Samples were collected over a period of time onto filters using a regulated canister. Because the sample canisters were set and automatically collected air samples, field duplicate samples were not applicable. Therefore, field duplicate samples were not collected or required.
9. Sample Dilution and Reporting Limits: Dilutions were not applicable for the filter samples.

10. Laboratory Completeness: All samples were analyzed as requested. Sixteen air samples (including one field blank and one lab blank) were analyzed for metals resulting in a total of 64 parameter data points. Additionally, particulate matter was determined for 30 samples (including one field blank and one lab blank). No data were qualified as estimated (J) or rejected (R) as a result of this review. As such, laboratory completeness was 100 percent.
11. Data Qualification Summary: See attached Table 2 for a summary of sample results and data qualifiers applied during the course of the review.

Attachments

Table 1 – Sample and Analysis Summary

Table 2 – Data Qualification Summary

Table 1
Sample and Analysis Summary

Sample Name	Date Collected	Lab	SDG	Lab Number	Matrix	Location	Comment	Analysis - STL-Burlington		
								As, Cd, Pb, Zn - ICP	Total Weight Gain - TSP	Total Weight Gain - PM ¹⁰
AR-01 Field Blank	8/24/2005	STL-Burlington	109536	636649	Filter	Laboratory Generated	Blank	X	X	X
AQ-1 AR-01 TSP	8/24/2005	STL-Burlington	109536	636650	Filter	Onsite-North			X	
AQ-1 AR-02 TSP	8/25/2005	STL-Burlington	109536	636651	Filter	Onsite-North			X	
AQ-1 AR-03 TSP	8/26/2005	STL-Burlington	109536	636652	Filter	Onsite-North			X	
AQ-1 AR-04 TSP	8/27/2005	STL-Burlington	109536	636653	Filter	Onsite-North			X	
AQ-1 AR-05 TSP	8/28/2005	STL-Burlington	109536	636654	Filter	Onsite-North			X	
AQ-1 AR-06 TSP	8/29/2005	STL-Burlington	109536	636655	Filter	Onsite-North			X	
AQ-1 AR-07 TSP	8/30/2005	STL-Burlington	109536	636656	Filter	Onsite-North			X	
AQ-2 AR-01 TSP	8/24/2005	STL-Burlington	109536	636664	Filter	Onsite-South			X	
AQ-2 AR-02 TSP	8/25/2005	STL-Burlington	109536	636665	Filter	Onsite-South			X	
AQ-3 AR-03 TSP	8/26/2005	STL-Burlington	109536	636666	Filter	Onsite-South			X	
AQ-4 AR-04 TSP	8/27/2005	STL-Burlington	109536	636667	Filter	Onsite-South			X	
AQ-5 AR-05 TSP	8/28/2005	STL-Burlington	109536	636668	Filter	Onsite-South			X	
AQ-6 AR-06 TSP	8/29/2005	STL-Burlington	109536	636669	Filter	Onsite-South			X	
AQ-7 AR-07 TSP	8/30/2005	STL-Burlington	109536	636670	Filter	Onsite-South			X	
AQ-1 AR-01 PM ¹⁰	8/24/2005	STL-Burlington	109536	636657	Filter	Onsite-North		X		X
AQ-1 AR-02 PM ¹⁰	8/25/2005	STL-Burlington	109536	636658	Filter	Onsite-North		X		X
AQ-1 AR-03 PM ¹⁰	8/26/2005	STL-Burlington	109536	636659	Filter	Onsite-North		X		X
AQ-1 AR-04 PM ¹⁰	8/27/2005	STL-Burlington	109536	636660	Filter	Onsite-North		X		X
AQ-1 AR-05 PM ¹⁰	8/28/2005	STL-Burlington	109536	636661	Filter	Onsite-North		X		X
AQ-1 AR-06 PM ¹⁰	8/29/2005	STL-Burlington	109536	636662	Filter	Onsite-North		X		X
AQ-1 AR-07 PM ¹⁰	8/30/2005	STL-Burlington	109536	636663	Filter	Onsite-North		X		X

Table 1
Sample and Analysis Summary

Sample Name	Date Collected	Lab	SDG	Lab Number	Matrix	Location	Comment	Analysis - STL-Burlington		
								As, Cd, Pb, Zn - ICP	Total Weight Gain - TSP	Total Weight Gain - PM ¹⁰
AQ-2 AR-01 PM ¹⁰	8/24/2005	STL-Burlington	109536	636671	Filter	Onsite-South		X		X
AQ-2 AR-02 PM ¹⁰	8/25/2005	STL-Burlington	109536	636672	Filter	Onsite-South		X		X
AQ-2 AR-03 PM ¹⁰	8/26/2005	STL-Burlington	109536	636673	Filter	Onsite-South		X		X
AQ-2 AR-04 PM ¹⁰	8/27/2005	STL-Burlington	109536	636674	Filter	Onsite-South		X		X
AQ-2 AR-05 PM ¹⁰	8/28/2005	STL-Burlington	109536	636675	Filter	Onsite-South		X		X
AQ-2 AR-06 PM ¹⁰	8/29/2005	STL-Burlington	109536	636676	Filter	Onsite-South		X		X
AQ-2 AR-07 PM ¹⁰	8/30/2005	STL-Burlington	109536	636677	Filter	Onsite-South		X		X
Lab Blank	9/1/2005	STL-Burlington	109536	636678	Filter	Laboratory Generated	Blank	X	X	X

As = Arsenic

Cd = Cadmium

ICP = Inductively Coupled Plasma

Pb = Lead

PM = Particulate Matter

SDG = Sample Delivery Group

STL-Burlington = Severn Trent Laboratories - Burlington, Vermont

TFM = Tulsa Fuel and Manufacturing

TSP = Total Suspended Particulate

Zn = Zinc

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
AQ-1 AR-01 PM ¹⁰	109536	636657	8/24/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-02 PM ¹⁰	109536	636658	8/25/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-03 PM ¹⁰	109536	636659	8/26/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-04 PM ¹⁰	109536	636660	8/27/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-05 PM ¹⁰	109536	636661	8/28/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-06 PM ¹⁰	109536	636662	8/29/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-1 AR-07 PM ¹⁰	109536	636663	8/30/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-01 PM ¹⁰	109536	636671	8/24/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-02 PM ¹⁰	109536	636672	8/25/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-03 PM ¹⁰	109536	636673	8/26/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-04 PM ¹⁰	109536	636674	8/27/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-05 PM ¹⁰	109536	636675	8/28/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-06 PM ¹⁰	109536	636676	8/29/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.
AQ-2 AR-07 PM ¹⁰	109536	636677	8/30/2005	METAL	Zinc	ug/filter			U*	Blank contamination. Disregarded as false positive.

ID = Identification

SDG = Sample Delivery Group

U* = Qualified as estimated during QC evaluation

ug/filter = micrograms/filter

**Oklahoma SEL
RI Phase I Data
May 2006 Event**

**ICP Analysis of Overcalibration XRF Data
Soil and Sediment Samples**

Data Quality Control Review

Date: February 23, 2007

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Shauna Lawrence

Laboratory Information: ODEQ - SEL

707 N. Robinson, Oklahoma City, OK 73102

Phone Number: 405-702-1113

Contact: Susan Elmenhorst-Mensik, QA

Laboratory Job Number(s):

<u>Reanalysis for Overcal XRF metals</u>	<u>403803 – 403860 (soil)</u>
<u>397335 – 397556 (sediment)</u>	<u></u>
<u>411177 – 411181 (soil/sediment)</u>	<u></u>
<u></u>	<u></u>

Signature of Reviewer: Shauna Lawrence

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review. The majority of these samples were reanalyses due to calibration range exceedences in the XRF analysis. The XRF data validation discussion for these samples is provided under separate cover in the Phase I data validation memo.
2. Chain-of-Custody (COC) Documentation: COCs were appropriately signed. The lab inadvertently checked-in Sample PZ-09/SS02 as PZ-04/SS02. The sample identification was hand-corrected on the analytical data. Impact to the data was negligible.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): Several of the metals analyses for these soil/sediment samples were analyzed outside the 6-month holding time. In accordance with *National Functional Guidelines for Inorganic Data Review* (NFGI, 2004), it is at the discretion of the data validator to apply holding time criteria based on water samples to soil samples. Since the data is still considered reliable and impact of the exceeded holding time is negligible, no data qualifiers were added for these exceeded holding times.
5. Method Blanks: No detections of arsenic, cadmium, lead, or zinc were noted in the metals method blanks.
6. Laboratory Control Sample (LCS): All LCS percent recoveries (RECs) were within their respective quality control (QC) limits.
7. Matrix Spike (MS)/Matrix Spike Duplicate (MSD): Due to insufficient sample volumes, MS/MSD samples were not analyzed for the ICP QC Batches. All other QC results were within QC limits and no data qualifiers were added based on these omissions.
8. Laboratory Duplicates: Laboratory duplicates are typically performed when MS/MSDs are not applicable. Due to limited sample volumes, no laboratory duplicate analyses were performed for the XRF analyses. As mentioned previously, the majority of these samples were reanalyses by ICP for overcal (>E) results by XRF. No data qualifiers were added based on these omissions.
9. Field Duplicates: The following samples were collected and analyzed in duplicate. The field duplicate comparison was assessed by comparing the results between the field duplicate pairs. If both results were less than five times the respective reporting limit, the sensitivity test was applied. If one or more of the results were greater than five times the reporting limit, the RPD was calculated. The RPD QC limit was 40 percent for soil samples. The field duplicate pair was qualitative in nature and no data qualifiers were added based solely on the field duplicate comparison. All data were adequately replicated:
 - OFF-14/SD01 and OFF-1001/SD01(original XRF and reanalysis by ICP) – All OK
 - SP-43/SS01 and SP-1011/SS01 (reanalysis by ICP) – All OK
 - TR-01/SS01 and TR-1000/SS01 (reanalysis by ICP)– All OK
 - TR-14/SS01 and TR-1003/SS01(reanalysis by ICP)– All OK

Samples TR-1002/SS02 (field duplicate of TR-09/SS02) and OFF-1000/SD01 (field duplicate of OFF-08/SD01) were analyzed by ICP due to overcal (>E) results in the original XRF analysis. The original samples did not exceed calibration range in the XRF analysis. Therefore, although these are field duplicate samples, they are not compared to their original samples since only the XRF analysis was performed for those samples. Field duplicate comparisons of these samples are provided in the data validation memo for Phase I soil sampling.

10. Data Consistency Check: All elevated metals results in the XRF analyses were confirmed in the ICP analysis.
11. Sample Dilution and Reporting Limits: No dilutions were reported by the laboratory. As noted previously, the majority of these analyses were reanalyses by ICP for overcal (>E) results reported by XRF analysis.
12. Laboratory Completeness: Samples were analyzed as requested. A total of 165 data points were generated for these data packages. This included 130 ICP, 3 TCLP, and 32 XRF data points.
13. Data Qualification Summary: See attached Table 2 for a summary of sample results. No data qualifiers were added during the course of this review.

Attachments

- Table 1 – Sample Collection Summary
- Table 2 – Data Qualifiers
- Table 3 – Field Duplicate Results

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name		Date Sampled	SDG	Laboratory ID	Sample Type	Comment	Total Metals				
							Analysis	As	Cd	Pb	Zn
Off-site Soil Sample(s)											
TRB09DW	SS01Grab	8/30/2005	2W1	411177-382597OC	OFF-SOIL		ICP	X		X	X
Sediment Samples											
MSR-01 / SD01		7/19/2005	OC	403800-378877OC	SEDIMENT	Field Dup of OFF-08/SD01	ICP				X
MSR-02 / SD01		7/19/2005	OC	403801-378878OC	SEDIMENT		ICP				X
MSR-03 / SD01		7/19/2005	OC	403802-378879OC	SEDIMENT		ICP			X	X
OFF-02 / SD01		7/20/2005	OC	403807-378895OC	SEDIMENT		ICP				X
OFF-04 / SD01		7/20/2005	OC	403808-378897OC	SEDIMENT		ICP				X
OFF-07 / SD01		7/20/2005	OC	403809-378902OC	SEDIMENT		ICP				X
OFF-1000 / SD01		7/20/2005	OC	403810-378904OC	SEDIMENT	Field Dup of OFF-08/SD01	ICP				X
OFF-14 SD01		5/9/2006	2W1	411179-397354OC	SEDIMENT	Field Dup of OFF-14/SD01	ICP, XRF	X	X	X	X
OFF-1001 SD01		5/9/2006	2W1	411178-397355OC	SEDIMENT		ICP, XRF	X	X	X	X
OFF-15 / SD01		5/9/2006	2W1	397356	SEDIMENT		ICP/TCLP/XRF	X	X	X	X
OFF-16 SD01		5/9/2006	2W1	411180-397351OC	SEDIMENT		ICP, XRF	X	X	X	X
OFF-17 / SD01		5/9/2006	2W1	397352	SEDIMENT		XRF	X	X	X	X
OFF-18 / SD01		5/9/2006	2W1	397353	SEDIMENT		XRF	X	X	X	X
OFF-19 SD01		5/9/2006	2W1	411181-397350OC	SEDIMENT		ICP, XRF	X	X	X	X
OFF-20 / SD01		5/9/2006	2W1	397349	SEDIMENT		XRF	X	X	X	X
PD04-01 / SD01		7/19/2005	OC	403803-378880OC	SEDIMENT		ICP				X
PD1-03 / SD01		7/20/2005	OC	403804-378888OC	SEDIMENT		ICP				X
PD2-02 / SD01		7/20/2005	OC	403805-378889OC	SEDIMENT		ICP				X
PD3-02 / SD01		7/20/2005	OC	403806-378893OC	SEDIMENT		ICP				X
Onsite Soil Samples											
PZ-07 / SS01		8/2/2005	OC	403860-381333OC	SITE-SOIL		ICP	X		X	X
PZ-09 / SS01		8/2/2005	OC	403861-381339OC	SITE-SOIL		ICP				X
PZ-09 / SS02		8/2/2005	OC	403862-381340OC	SITE-SOIL		ICP				X
SP-16 / SS01		7/29/2005	OC	403849-380186OC	SITE-SOIL		ICP				X
SP-18 / SS01		7/29/2005	OC	403848-380180OC	SITE-SOIL		ICP				X
SP-19 / SS02		7/29/2005	OC	403844-380174OC	SITE-SOIL		ICP				X
SP-27 / SS01		7/29/2005	OC	403845-380177OC	SITE-SOIL		ICP				X
SP-27 / SS02		7/29/2005	OC	403846-380178OC	SITE-SOIL		ICP			X	X
SP-27 / SS03		7/29/2005	OC	403847-380179OC	SITE-SOIL		ICP			X	X

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Laboratory ID	Sample Type	Comment	Total Metals				
						Analysis	As	Cd	Pb	Zn
Onsite Soil Samples (continued)										
SP-30 / SS01	8/1/2005	OC	403854-380206OC	SITE-SOIL	Field Dup of TR-01/SS01	ICP			X	X
SP-32 / SS01	8/1/2005	OC	403850-380194OC	SITE-SOIL		ICP				X
SP-35 / SS01	8/1/2005	OC	403855-380222OC	SITE-SOIL		ICP				X
SP-38 / SS01	8/1/2005	OC	403851-380198OC	SITE-SOIL		ICP				X
SP-39 / SS01	7/29/2005	OC	403843-380169OC	SITE-SOIL		ICP				X
SP-40 / SS01	7/28/2005	OC	403833-380098OC	SITE-SOIL		ICP				X
SP-40 / SS02	7/28/2005	OC	403834-380099OC	SITE-SOIL		ICP				X
SP-41 / SS01	8/1/2005	OC	403856-380229OC	SITE-SOIL		ICP				X
SP-41 / SS02	8/1/2005	OC	403859-380254OC	SITE-SOIL		ICP				X
SP-43 / SS01	8/1/2005	OC	403857-380233OC	SITE-SOIL		ICP				X
SP-1011 / SS01	8/1/2005	OC	403858-380234OC	SITE-SOIL		ICP				X
SP-47 / SS01	7/28/2005	OC	403835-380101OC	SITE-SOIL		ICP		X	X	X
SP-48 / SS01	7/28/2005	OC	403852-380200OC	SITE-SOIL		ICP				X
SP-48 / SS02	7/28/2005	OC	403853-380201OC	SITE-SOIL		ICP	X		X	X
TR-01 / SS01	7/26/2005	OC	403811-379564OC	SITE-SOIL		ICP	X		X	X
TR-1000 / SS01	7/26/2005	OC	403812-379565OC	SITE-SOIL		ICP	X		X	X
TR-02 / SS01	7/26/2005	OC	403813-379568OC	SITE-SOIL		ICP	X		X	X
TR-03 / SS01	7/26/2005	OC	403814-379570OC	SITE-SOIL		ICP	X		X	X
TR-03 / SS02	7/26/2005	OC	403815-379571OC	SITE-SOIL		ICP				X
TR-04 / SS01	7/26/2005	OC	403816-379573OC	SITE-SOIL		ICP	X		X	X
TR-05 / SS02	7/26/2005	OC	403817-379576OC	SITE-SOIL		ICP			X	X
TR-06 / SS01	7/26/2005	OC	403818-379579OC	SITE-SOIL		ICP			X	X
TR-07 / SS01	7/26/2005	OC	403819-379581OC	SITE-SOIL		ICP	X		X	X
TR-08 / SS01	7/26/2005	OC	403820-379584OC	SITE-SOIL		ICP	X		X	X
TR-09 / SS01	7/27/2005	OC	403825-379592OC	SITE-SOIL	Field Dup of TR-09/SS02	ICP	X		X	X
TR-1002 / SS02	7/27/2005	OC	403826-379594OC	SITE-SOIL		ICP	X		X	X
TR-10 / SS01	7/27/2005	OC	403827-379596OC	SITE-SOIL		ICP	X	X	X	X
TR-11 / SS01	7/26/2005	OC	403821-379586OC	SITE-SOIL		ICP				X
TR-11 / SS02	7/26/2005	OC	403822-379587OC	SITE-SOIL		ICP				X
TR-12 / SS01	7/28/2005	OC	403836-380125OC	SITE-SOIL	Field Dup of TR-14/SS01	ICP	X		X	X
TR-13 / SS01	7/27/2005	OC	403828-379598OC	SITE-SOIL		ICP	X	X	X	X
TR-13 / SS02	7/27/2005	OC	403829-379599OC	SITE-SOIL		ICP			X	X
TR-14 / SS01	7/27/2005	OC	403830-379601OC	SITE-SOIL		ICP			X	X
TR-1003 / SS01	7/27/2005	OC	403831-379602OC	SITE-SOIL		ICP	X		X	X

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Laboratory ID	Sample Type	Comment	Total Metals				
						Analysis	As	Cd	Pb	Zn
Onsite Soil Samples (continued)										
TR-15 / SS01	7/26/2005	OC	403823-379589OC	SITE-SOIL		ICP				X
TR-15 / SS02	7/26/2005	OC	403824-379590OC	SITE-SOIL		ICP			X	X
TR-16 / SS01	7/27/2005	OC	403832-379604OC	SITE-SOIL		ICP			X	X
TR-17 / SS01	7/28/2005	OC	403837-380127OC	SITE-SOIL		ICP	X		X	X
TR-17 / SS02	7/28/2005	OC	403838-380128OC	SITE-SOIL		ICP	X		X	X
TR-18 / SS01	7/28/2005	OC	403839-380130OC	SITE-SOIL		ICP	X		X	X
TR-19 / SS01	7/28/2005	OC	403840-380133OC	SITE-SOIL		ICP	X		X	X
TR-20 / SS01	7/28/2005	OC	403841-380136OC	SITE-SOIL		ICP	X		X	X
TR-21 / SS01	7/28/2005	OC	403842-380138OC	SITE-SOIL		ICP	X		X	X

Metals analyzed include one or more of the following: arsenic (As), cadmium (Cd), lead (Pb), and/or zinc (Zn).

ICP = Inductively coupled plasma

ID = Identification

OC = Result exceeds calibration range of equipment

SDG = Sample Delivery Group

TCLP = Toxicity Characteristic Leaching Procedure

XRF = X-Ray fluorescence

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples								
MSR-01 / SD01	7/19/2005	403800-378877OC	METAL	Zinc, Total (ICP)	mg/kg	24400		
MSR-02 / SD01	7/19/2005	403801-378878OC	METAL	Zinc, Total (ICP)	mg/kg	20700		
MSR-03 / SD01	7/19/2005	403802-378879OC	METAL	Lead, Total (ICP)	mg/kg	8150		
MSR-03 / SD01	7/19/2005	403802-378879OC	METAL	Zinc, Total (ICP)	mg/kg	34700		
OFF-02 / SD01	7/20/2005	403807-378895OC	METAL	Zinc, Total (ICP)	mg/kg	7150		
OFF-04 / SD01	7/20/2005	403808-378897OC	METAL	Zinc, Total (ICP)	mg/kg	26700		
OFF-07 / SD01	7/20/2005	403809-378902OC	METAL	Zinc, Total (ICP)	mg/kg	15600		
OFF-1000 / SD01	7/20/2005	403810-378904OC	METAL	Zinc, Total (ICP)	mg/kg	6490		
(Field dup of OFF-08/SD01 which did not require reanalysis)								
OFF-14 / SD01	5/9/2006	397354	METAL	Arsenic, Total (XRF)	mg/kg	214		
OFF-14 / SD01	5/9/2006	397354	METAL	Cadmium, Total (XRF)	mg/kg	362		
OFF-14 / SD01	5/9/2006	397354	METAL	Lead, Total (XRF)	mg/kg	3710		
OFF-14 / SD01	5/9/2006	397354	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-14 / SD01	5/9/2006	411179-397354OC	METAL	Zinc, Total (ICP)	mg/kg	14800		
OFF-1001 / SD01	5/9/2006	397355	METAL	Arsenic, Total (XRF)	mg/kg	307		
OFF-1001 / SD01	5/9/2006	397355	METAL	Cadmium, Total (XRF)	mg/kg	615		
OFF-1001 / SD01	5/9/2006	397355	METAL	Lead, Total (XRF)	mg/kg	5080		
OFF-1001 / SD01	5/9/2006	397355	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-1001 / SD01	5/9/2006	411178-397355OC	METAL	Zinc, Total (ICP)	mg/kg	14400		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples (continued)								
OFF-15 / SD01	5/9/2006	397356	METAL	Arsenic, Total (ICP)	mg/kg	39		
OFF-15 / SD01	5/9/2006	397356	METAL	Arsenic, Total (XRF)	mg/kg	341		
OFF-15 / SD01	5/9/2006	397356	METAL	Cadmium, Total (ICP)	mg/kg	53		
OFF-15 / SD01	5/9/2006	397356	METAL	Cadmium, Total (XRF)	mg/kg	268		
OFF-15 / SD01	5/9/2006	397356	METAL	Lead, Total (ICP)	mg/kg	1820		
OFF-15 / SD01	5/9/2006	397356	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
OFF-15 / SD01	5/9/2006	397356	METAL	Zinc, Total (ICP)	mg/kg	7280		
OFF-15 / SD01	5/9/2006	397356	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-15 / SD01	5/9/2006	397356	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OFF-15 / SD01	5/9/2006	397356	TCLPMET	Cadmium, TCLP	mg/L	1.08		
OFF-15 / SD01	5/9/2006	397356	TCLPMET	Lead, TCLP	mg/L	2.69		
OFF-16 / SD01	5/9/2006	397351	METAL	Arsenic, Total (XRF)	mg/kg	197		
OFF-16 / SD01	5/9/2006	397351	METAL	Cadmium, Total (XRF)	mg/kg	215		
OFF-16 / SD01	5/9/2006	397351	METAL	Lead, Total (XRF)	mg/kg	3120		
OFF-16 / SD01	5/9/2006	397351	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-16 / SD01	5/9/2006	411180-397351OC	METAL	Zinc, Total (ICP)	mg/kg	10100		
OFF-17 / SD01	5/9/2006	397352	METAL	Arsenic, Total (XRF)	mg/kg	15		
OFF-17 / SD01	5/9/2006	397352	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OFF-17 / SD01	5/9/2006	397352	METAL	Lead, Total (XRF)	mg/kg	220		
OFF-17 / SD01	5/9/2006	397352	METAL	Zinc, Total (XRF)	mg/kg	872		
OFF-18 / SD01	5/9/2006	397353	METAL	Arsenic, Total (XRF)	mg/kg	20	U	
OFF-18 / SD01	5/9/2006	397353	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OFF-18 / SD01	5/9/2006	397353	METAL	Lead, Total (XRF)	mg/kg	119		
OFF-18 / SD01	5/9/2006	397353	METAL	Zinc, Total (XRF)	mg/kg	699		
OFF-19 / SD01	5/9/2006	397350	METAL	Arsenic, Total (XRF)	mg/kg	157		
OFF-19 / SD01	5/9/2006	397350	METAL	Cadmium, Total (XRF)	mg/kg	40		
OFF-19 / SD01	5/9/2006	397350	METAL	Lead, Total (XRF)	mg/kg	1980		
OFF-19 / SD01	5/9/2006	397350	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OFF-19 / SD01	5/9/2006	411181-397350OC	METAL	Zinc, Total (ICP)	mg/kg	6310		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples (continued)								
OFF-20 / SD01	5/9/2006	397349	METAL	Arsenic, Total (XRF)	mg/kg	34		
OFF-20 / SD01	5/9/2006	397349	METAL	Cadmium, Total (XRF)	mg/kg	31		
OFF-20 / SD01	5/9/2006	397349	METAL	Lead, Total (XRF)	mg/kg	468		
OFF-20 / SD01	5/9/2006	397349	METAL	Zinc, Total (XRF)	mg/kg	2940		
PD04-01 / SD01	7/19/2005	403803-378880OC	METAL	Zinc, Total (ICP)	mg/kg	7140		
PD1-03 / SD01	7/20/2005	403804-378888OC	METAL	Zinc, Total (ICP)	mg/kg	6940		
PD2-02 / SD01	7/20/2005	403805-378889OC	METAL	Zinc, Total (ICP)	mg/kg	9590		
PD3-02 / SD01	7/20/2005	403806-378893OC	METAL	Zinc, Total (ICP)	mg/kg	9700		
Onsite Soil Samples								
PZ-07 / SS01	8/2/2005	403860-381333OC	METAL	Arsenic, Total (ICP)	mg/kg	108		
PZ-07 / SS01	8/2/2005	403860-381333OC	METAL	Lead, Total (ICP)	mg/kg	7820		
PZ-07 / SS01	8/2/2005	403860-381333OC	METAL	Zinc, Total (ICP)	mg/kg	15200		
PZ-09 / SS01	8/2/2005	403861-381339OC	METAL	Zinc, Total (ICP)	mg/kg	14300		
PZ-09 / SS02	8/2/2005	403862-381340OC	METAL	Zinc, Total (ICP)	mg/kg	10800		
SP-16 / SS01	7/29/2005	403849-380186OC	METAL	Zinc, Total (ICP)	mg/kg	5860		
SP-18 / SS01	7/29/2005	403848-380180OC	METAL	Zinc, Total (ICP)	mg/kg	8130		
SP-19 / SS02	7/29/2005	403844-380174OC	METAL	Zinc, Total (ICP)	mg/kg	8280		
SP-27 / SS01	7/29/2005	403845-380177OC	METAL	Zinc, Total (ICP)	mg/kg	11600		
SP-27 / SS02	7/29/2005	403846-380178OC	METAL	Lead, Total (ICP)	mg/kg	4230		
SP-27 / SS02	7/29/2005	403846-380178OC	METAL	Zinc, Total (ICP)	mg/kg	30900		
SP-27 / SS03	7/29/2005	403847-380179OC	METAL	Lead, Total (ICP)	mg/kg	2290		
SP-27 / SS03	7/29/2005	403847-380179OC	METAL	Zinc, Total (ICP)	mg/kg	21600		
SP-30 / SS01	8/1/2005	403854-380206OC	METAL	Lead, Total (ICP)	mg/kg	5170		
SP-30 / SS01	8/1/2005	403854-380206OC	METAL	Zinc, Total (ICP)	mg/kg	35600		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
SP-32 / SS01	8/1/2005	403850-380194OC	METAL	Zinc, Total (ICP)	mg/kg	4860		
SP-35 / SS01	8/1/2005	403855-380222OC	METAL	Zinc, Total (ICP)	mg/kg	10300		
SP-38 / SS01	8/1/2005	403851-380198OC	METAL	Zinc, Total (ICP)	mg/kg	6240		
SP-39 / SS01	7/29/2005	403843-380169OC	METAL	Zinc, Total (ICP)	mg/kg	11800		
SP-40 / SS01	7/28/2005	403833-380098OC	METAL	Zinc, Total (ICP)	mg/kg	85900		
SP-40 / SS02	7/28/2005	403834-380099OC	METAL	Zinc, Total (ICP)	mg/kg	4270		
SP-41 / SS01	8/1/2005	403856-380229OC	METAL	Zinc, Total (ICP)	mg/kg	18700		
SP-41 / SS02	8/1/2005	403859-380254OC	METAL	Zinc, Total (ICP)	mg/kg	13700		
SP-43 / SS01	8/1/2005	403857-380233OC	METAL	Zinc, Total (ICP)	mg/kg	6520		
SP-1011 / SS01	8/1/2005	403858-380234OC	METAL	Zinc, Total (ICP)	mg/kg	9460		
SP-47 / SS01	7/28/2005	403835-380101OC	METAL	Cadmium, Total (ICP)	mg/kg	799		
SP-47 / SS01	7/28/2005	403835-380101OC	METAL	Lead, Total (ICP)	mg/kg	3650		
SP-47 / SS01	7/28/2005	403835-380101OC	METAL	Zinc, Total (ICP)	mg/kg	41400		
SP-48 / SS01	7/28/2005	403852-380200OC	METAL	Zinc, Total (ICP)	mg/kg	47900		
SP-48 / SS02	7/28/2005	403853-380201OC	METAL	Arsenic, Total (ICP)	mg/kg	703		
SP-48 / SS02	7/28/2005	403853-380201OC	METAL	Lead, Total (ICP)	mg/kg	13800		
SP-48 / SS02	7/28/2005	403853-380201OC	METAL	Zinc, Total (ICP)	mg/kg	33000		
TR-01 / SS01	7/26/2005	403811-379564OC	METAL	Arsenic, Total (ICP)	mg/kg	548		
TR-01 / SS01	7/26/2005	403811-379564OC	METAL	Lead, Total (ICP)	mg/kg	20100		
TR-01 / SS01	7/26/2005	403811-379564OC	METAL	Zinc, Total (ICP)	mg/kg	145000		
TR-1000 / SS01	7/26/2005	403812-379565OC	METAL	Arsenic, Total (ICP)	mg/kg	455		
TR-1000 / SS01	7/26/2005	403812-379565OC	METAL	Lead, Total (ICP)	mg/kg	18100		
TR-1000 / SS01	7/26/2005	403812-379565OC	METAL	Zinc, Total (ICP)	mg/kg	148000		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
TR-02 / SS01	7/26/2005	403813-379568OC	METAL	Arsenic, Total (ICP)	mg/kg	751		
TR-02 / SS01	7/26/2005	403813-379568OC	METAL	Lead, Total (ICP)	mg/kg	20700		
TR-02 / SS01	7/26/2005	403813-379568OC	METAL	Zinc, Total (ICP)	mg/kg	76600		
TR-03 / SS01	7/26/2005	403814-379570OC	METAL	Arsenic, Total (ICP)	mg/kg	242		
TR-03 / SS01	7/26/2005	403814-379570OC	METAL	Lead, Total (ICP)	mg/kg	13600		
TR-03 / SS01	7/26/2005	403814-379570OC	METAL	Zinc, Total (ICP)	mg/kg	19900		
TR-03 / SS02	7/26/2005	403815-379571OC	METAL	Zinc, Total (ICP)	mg/kg	18400		
TR-04 / SS01	7/26/2005	403816-379573OC	METAL	Arsenic, Total (ICP)	mg/kg	554		
TR-04 / SS01	7/26/2005	403816-379573OC	METAL	Lead, Total (ICP)	mg/kg	71700		
TR-04 / SS01	7/26/2005	403816-379573OC	METAL	Zinc, Total (ICP)	mg/kg	96100		
TR-05 / SS02	7/26/2005	403817-379576OC	METAL	Lead, Total (ICP)	mg/kg	6890		
TR-05 / SS02	7/26/2005	403817-379576OC	METAL	Zinc, Total (ICP)	mg/kg	37500		
TR-06 / SS01	7/26/2005	403818-379579OC	METAL	Lead, Total (ICP)	mg/kg	7500		
TR-06 / SS01	7/26/2005	403818-379579OC	METAL	Zinc, Total (ICP)	mg/kg	36800		
TR-07 / SS01	7/26/2005	403819-379581OC	METAL	Arsenic, Total (ICP)	mg/kg	492		
TR-07 / SS01	7/26/2005	403819-379581OC	METAL	Lead, Total (ICP)	mg/kg	23700		
TR-07 / SS01	7/26/2005	403819-379581OC	METAL	Zinc, Total (ICP)	mg/kg	84700		
TR-08 / SS01	7/26/2005	403820-379584OC	METAL	Arsenic, Total (ICP)	mg/kg	203		
TR-08 / SS01	7/26/2005	403820-379584OC	METAL	Lead, Total (ICP)	mg/kg	10300		
TR-08 / SS01	7/26/2005	403820-379584OC	METAL	Zinc, Total (ICP)	mg/kg	37000		
TR-09 / SS01	7/27/2005	403825-379592OC	METAL	Arsenic, Total (ICP)	mg/kg	620		
TR-09 / SS01	7/27/2005	403825-379592OC	METAL	Lead, Total (ICP)	mg/kg	17000		
TR-09 / SS01	7/27/2005	403825-379592OC	METAL	Zinc, Total (ICP)	mg/kg	129000		
TR-1002 / SS02	7/27/2005	403826-379594OC	METAL	Arsenic, Total (ICP)	mg/kg	504		
TR-1002 / SS02	7/27/2005	403826-379594OC	METAL	Lead, Total (ICP)	mg/kg	12700		
TR-1002 / SS02	7/27/2005	403826-379594OC	METAL	Zinc, Total (ICP)	mg/kg	81400		
(Field dup of TR-09/SS02 which did not require reanalysis)								

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
TR-10 / SS01	7/27/2005	403827-379596OC	METAL	Arsenic, Total (ICP)	mg/kg	1050		
TR-10 / SS01	7/27/2005	403827-379596OC	METAL	Cadmium, Total (ICP)	mg/kg	1620		
TR-10 / SS01	7/27/2005	403827-379596OC	METAL	Lead, Total (ICP)	mg/kg	25600		
TR-10 / SS01	7/27/2005	403827-379596OC	METAL	Zinc, Total (ICP)	mg/kg	165000		
TR-11 / SS01	7/26/2005	403821-379586OC	METAL	Zinc, Total (ICP)	mg/kg	25800		
TR-11 / SS02	7/26/2005	403822-379587OC	METAL	Zinc, Total (ICP)	mg/kg	16000		
TR-12 / SS01	7/28/2005	403836-380125OC	METAL	Arsenic, Total (ICP)	mg/kg	219		
TR-12 / SS01	7/28/2005	403836-380125OC	METAL	Lead, Total (ICP)	mg/kg	27300		
TR-12 / SS01	7/28/2005	403836-380125OC	METAL	Zinc, Total (ICP)	mg/kg	51400		
TR-13 / SS01	7/27/2005	403828-379598OC	METAL	Arsenic, Total (ICP)	mg/kg	525		
TR-13 / SS01	7/27/2005	403828-379598OC	METAL	Cadmium, Total (ICP)	mg/kg	840		
TR-13 / SS01	7/27/2005	403828-379598OC	METAL	Lead, Total (ICP)	mg/kg	28700		
TR-13 / SS01	7/27/2005	403828-379598OC	METAL	Zinc, Total (ICP)	mg/kg	118000		
TR-13 / SS02	7/27/2005	403829-379599OC	METAL	Lead, Total (ICP)	mg/kg	13100		
TR-13 / SS02	7/27/2005	403829-379599OC	METAL	Zinc, Total (ICP)	mg/kg	39300		
TR-14 / SS01	7/27/2005	403830-379601OC	METAL	Lead, Total (ICP)	mg/kg	4520		
TR-14 / SS01	7/27/2005	403830-379601OC	METAL	Zinc, Total (ICP)	mg/kg	25100		
TR-1003 / SS01	7/27/2005	403831-379602OC	METAL	Arsenic, Total (ICP)	mg/kg	155		
TR-1003 / SS01	7/27/2005	403831-379602OC	METAL	Lead, Total (ICP)	mg/kg	5660		
TR-1003 / SS01	7/27/2005	403831-379602OC	METAL	Zinc, Total (ICP)	mg/kg	30800		
TR-15 / SS01	7/26/2005	403823-379589OC	METAL	Zinc, Total (ICP)	mg/kg	12800		
TR-15 / SS02	7/26/2005	403824-379590OC	METAL	Lead, Total (ICP)	mg/kg	7550		
TR-15 / SS02	7/26/2005	403824-379590OC	METAL	Zinc, Total (ICP)	mg/kg	19400		
TR-16 / SS01	7/27/2005	403832-379604OC	METAL	Lead, Total (ICP)	mg/kg	4770		
TR-16 / SS01	7/27/2005	403832-379604OC	METAL	Zinc, Total (ICP)	mg/kg	15200		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID(s)	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
TR-17 / SS01	7/28/2005	403837-380127OC	METAL	Arsenic, Total (ICP)	mg/kg	909		
TR-17 / SS01	7/28/2005	403837-380127OC	METAL	Lead, Total (ICP)	mg/kg	27000		
TR-17 / SS01	7/28/2005	403837-380127OC	METAL	Zinc, Total (ICP)	mg/kg	52000		
TR-17 / SS02	7/28/2005	403838-380128OC	METAL	Arsenic, Total (ICP)	mg/kg	330		
TR-17 / SS02	7/28/2005	403838-380128OC	METAL	Lead, Total (ICP)	mg/kg	15000		
TR-17 / SS02	7/28/2005	403838-380128OC	METAL	Zinc, Total (ICP)	mg/kg	27700		
TR-18 / SS01	7/28/2005	403839-380130OC	METAL	Arsenic, Total (ICP)	mg/kg	805		
TR-18 / SS01	7/28/2005	403839-380130OC	METAL	Lead, Total (ICP)	mg/kg	61600		
TR-18 / SS01	7/28/2005	403839-380130OC	METAL	Zinc, Total (ICP)	mg/kg	70500		
TR-19 / SS01	7/28/2005	403840-380133OC	METAL	Arsenic, Total (ICP)	mg/kg	270		
TR-19 / SS01	7/28/2005	403840-380133OC	METAL	Lead, Total (ICP)	mg/kg	25100		
TR-19 / SS01	7/28/2005	403840-380133OC	METAL	Zinc, Total (ICP)	mg/kg	75800		
TR-20 / SS01	7/28/2005	403841-380136OC	METAL	Arsenic, Total (ICP)	mg/kg	480		
TR-20 / SS01	7/28/2005	403841-380136OC	METAL	Lead, Total (ICP)	mg/kg	38600		
TR-20 / SS01	7/28/2005	403841-380136OC	METAL	Zinc, Total (ICP)	mg/kg	53100		
TR-21 / SS01	7/28/2005	403842-380138OC	METAL	Arsenic, Total (ICP)	mg/kg	625		
TR-21 / SS01	7/28/2005	403842-380138OC	METAL	Lead, Total (ICP)	mg/kg	28800		
TR-21 / SS01	7/28/2005	403842-380138OC	METAL	Zinc, Total (ICP)	mg/kg	82900		
Offsite Soil Samples								
TRB-09DW / SSO1Grab	8/30/2006	411177-382597OC	METAL	Arsenic, Total (ICP)	mg/kg	538		
TRB-09DW / SSO1Grab	8/30/2006	411177-382597OC	METAL	Lead, Total (ICP)	mg/kg	8950		
TRB-09DW / SSO1Grab	8/30/2006	411177-382597OC	METAL	Zinc, Total (ICP)	mg/kg	25300		

>E = Result exceeds calibration range
ICP = Inductively coupled plasma
ID = Identification
mg/kg = milligrams per kilogram
OC = Indicates sample was reanalyzed due to overcal result
TCLP = Toxicity Characteristic Leaching Procedure
U = Compound was not detected
XRF = X-Ray fluorescence

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OFF-14 / SD01 5/9/2006	OFF-1001 / SD01 5/9/2006	SP-43 / SS01 8/1/2005	SP-1011 / SS01 8/1/2005	TR-01 / SS01 7/26/2005	TR-1000 / SS01 7/26/2005	TR-14 / SS01 7/27/2005	TR-1003 / SS01 7/27/2005
Parameter	Units								
Arsenic, Total (ICP)	mg/kg	--	--	--	--	548	455	--	155
Lead, Total (ICP)	mg/kg	--	--	--	--	20100	18100	4520	5660
Zinc, Total (ICP)	mg/kg	14800	14400	9460	6520	145000	148000	25100	30800
Zinc, Total (XRF)	mg/kg	7000 >E	7000 >E	--	--	--	--	--	--

-- = Not Analyzed
>E = Result exceeds calibration range of equipment
ICP = Inductively Coupled Plasma
mg/kg = milligrams per kilogram
XRF = X-Ray fluorescence

Oklahoma SEL

**Sieve #60 vs Sieve #200 Study
ICP and XRF Metals Data**

From: Shelton, Sharon
Sent: Thursday, August 10, 2006 3:04 PM
To: Thomas, George
Cc: Stecher, Tim; Barker, David
Subject: TFM - XRF Data 60 versus 200 Sieve Comparative Study
George –

BMCD has performed statistical analyses on data generated as part of the study regarding the use of a 60-mesh sieve versus 200-mesh sieve for preparation of soil samples for XRF analysis. The results of samples prepared using a 200-mesh sieve versus a 60-mesh sieve were evaluated using a least squares linear regression as recommended in USEPA SW-846 Method 6200, Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil Sediment. Since the measured concentrations spanned more than one order of magnitude, the data were log-transformed as recommended in the USEPA method. For each of the metals analyzed (i.e., arsenic, cadmium, lead, and zinc), the correlation coefficient was greater than 0.9 in accordance with method requirements. The correlation coefficients were as follows:

Arsenic = 0.9631
Cadmium = 0.9858
Lead = 0.9859
Zinc = 0.9483

Therefore, the results for samples prepared using a 200-sieve or a 60-sieve can be considered statistically equivalent. A discussion of SEL's soil sample preparation techniques during RI Phase I using the 200-mesh sieve rather than the method-required 60-mesh sieve and results of the comparative study will be added to the data QC review memo that will be included in the RI Report. The statistical comparison indicates that the 200-mesh sieve data are usable to meet the objectives of the RI. No additional data qualification or analysis is necessary.

Please let me know if there are any questions or if you need additional information.

Thanks,
Sharon

Sharon Shelton
Project Chemist
Burns & McDonnell Engineering Company, Inc.
Phone: 816-822-3168
Fax: 816-822-3494
Email: sshelton@burnsmcd.com

**Oklahoma SEL
RI Phase II Data**

Data Quality Control Review

Date: February 6, 2007

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Shauna Lawrence

Laboratory Information: ODEQ - SEL

707 N. Robinson, Oklahoma City, OK 73102

Phone Number: 405-702-1113

Contact: Sara Downard, Project Manager

Laboratory Number(s):

404994 - 405891 (Soil samples) _____

Signature of Reviewer: Shauna Lawrence

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review.

The following discrepancies were noted between the chains-of-custody and the analytical results:

- Sample OSL-39A/SS02 was mislabeled in the analytical results as OSL-39S/SS02 and Samples TRB-10D/SS01/TRB-10D/SS02 were mislabeled as TRB-100/XXXX.
- The COCs for Samples OSL-100/SS01, OSL-100/SS02, OSL-101/SS01, OSL-101/SS02, and OSL-49c/SS01 indicated analysis of metals by XRF. However, each of these samples were analyzed for metals by XRF and ICP methods.

Five samples were collected and submitted for matrix spike/matrix spike duplicate (MS/MSD) analyses. Twenty one samples were collected in duplicate for confirmation analysis by ICP and/or TCLP. These samples are indicated in the Remarks section of their respective COCs.

2. Chain-of-Custody Documentation: COCs were appropriately signed.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): All metals analyses for the sediment and soil samples were analyzed within the required method holding time.
5. Method Blanks: No detections of arsenic, cadmium, lead, and/or zinc were noted in the metals method blanks, where applicable.
6. Laboratory Control Sample (LCS): All LCS percent recoveries (RECs) were within their respective QC limits.
7. Matrix Spike (MS)/Matrix Spike Duplicate (MSD): The lab performed MS/MSD analyses on five project samples for the ICP QC Batch. For the MS/MSD performed on Sample OSL-103/SS02 (405033), the MS/MSD RECs of zinc, ICP were 68.4 percent and 29.2 percent, respectively. For the MS/MSD performed on Sample FP-02/SD01 (405889), the MS REC of zinc, ICP was 46.3 percent and the MS/MSD relative percent difference (RPD) of zinc, ICP was 21.8 percent. These RECs were below the 75 percent QC limit while the RPD exceeded its 20 percent QC limit. The RECs below QC limits suggests potential accuracy problems (low bias) while the RPD outside QC limits suggests potential precision problems. As such, each of the noted spiked samples were qualified as estimated (J-) for zinc, ICP. No other associated samples received qualification since other batch MS/MSDs were within acceptable limits.

All other MS/MSDs were performed on project-specific samples and results were within QC limits. MS/MSDs were performed for the TCLP and ICP metals QC batches. As noted subsequently, the XRF QC batches were analyzed and reported with laboratory duplicate comparisons.
8. Laboratory Duplicates: Laboratory duplicates were performed in lieu of MS/MSDs, as sample volumes allowed, for the XRF metals analyses. With the following exception, all RPDs between the laboratory duplicates were below the 25 percent laboratory QC maximum.

XRF QC Batch	Sample ID Number	Analyte	RPD	Associated Samples Qualified as Estimated (J*)
#3	405033 OSL-103/SS02	Cadmium, XRF	31.9	BG-SP-07/SS01 (405024) BG-SP-07/SS02 (405025) BG-SP-07/SS03 (405026) OSL-102/SS01 (405034) OSL-102/SS02 (405035) OSL-103/SS01 (405032) OSL-40A/SS02 (405036) OSL-40B/SS01 (405037) OSL-40B/SS02 (405038)

This elevated laboratory duplicate RPD suggests potential problems with analytical precision. To account for potential precision problems, all associated samples for XRF QC Batch #3 were qualified as estimated (J*) for cadmium, XRF.

9. **Field Duplicates:** The following samples were collected and analyzed in duplicate. The field duplicate comparison was assessed by comparing the results between the field duplicate pairs. If both results were less than five times the respective reporting limit, the sensitivity test was applied. If one or more of the results were greater than five times the reporting limit, the RPD was calculated. The RPD QC limit was 40 percent for soil samples. The field duplicate pair was qualitative in nature and no data qualifiers were added based solely on the field duplicate comparison. All data were adequately replicated unless noted below:

- BG-OSL-07/SS01 and BG-OSL-1000/SS01 – All OK
- BG-SP-05/SS02 and BG-SP-1000 – All OK
- FP-02/SD01 and FP-1000/SD01 – Lead, TCLP results failed the sensitivity test.
- OSL-12E/SS01 and OSL-1006/SS01 – All OK
- OSL-36E/SS01 and OSL-1008/SS01 – The RPD between the zinc, XRF results exceeded the QC limit.
- OSL-39C/SS01 and OSL-1007/SS01 – All OK
- OSL-40B/SS02 and OSL-1004/SS02 – The RPD between the zinc, XRF results exceeded the QC limit, while the lead, XRF results failed the sensitivity test.
- OSL-49A/SS02 and OSL-1010/SS02 – All OK
- OSL-96C/SS01 and OSL-1011/SS01 – All OK
- OSL-97F/SS02 and OSL-1012/SS02 – The RPD between the lead, XRF failed exceeded the QC limit, while the arsenic, XRF failed the sensitivity test.
- OSL-103/SS02 and OSL-1013/SS02– The RPDs between the following analytes exceeded the QC limit: cadmium, ICP; lead, ICP; zinc, ICP; lead, XRF; zinc, XRF; and cadmium, TCLP.
- OSL-109/SS01 and OSL-1014/SS01 – All OK
- SP-55/SS01 and SP-1015/SS01 – All OK
- SP-60/SS02 and SP-1016/SS02 – All OK
- TRB-08B/SS01 and TRB-1001/SS01 – Cadmium, TCLP failed the sensitivity test.
- TRB-09E/SS01 and TRB-1002/SS01 – All OK
- TRB-10E/SS02 and TRB-1003/SS02 – The RPDs between the lead, XRF and zinc, XRF exceeded the QC limit.
- TSL-05D/SS02 and TSL-1001/SS02 – All OK

10. Data Consistency Check: The data were reviewed to determine if the results matched what was expected. That is, on-site samples generally exhibited higher metal concentrations than background or off-site samples.
11. Sample Dilution and Reporting Limits: No dilutions were reported by the laboratory. Soil results were reported on a dry weight basis.
12. Laboratory Completeness: Samples were analyzed as requested. A total of 854 parameter data points were generated for these data packages. This included 108 ICP, 66 TCLP, and 680 XRF data points. No data was rejected (R) as a result of this review.
13. Data Qualification Summary: See attached Table 2 for a summary of sample results and data qualifiers applied during the course of the review.

Attachments

Table 1 – Sample Collection Summary

Table 2 – Data Qualifiers

Table 3 – Field Duplicate Results – Soil and Sediment Samples

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Background Samples									
BG-OSL-03 / SS01	9/1/2006	2W1		405081	BACKGROUND	Field Duplicate of BG-OSL-07/SS01	X	X	X
BG-OSL-04 / SS01	8/31/2006	2W1		405079	BACKGROUND			X	
BG-OSL-05 / SS01	8/31/2006	2W1		405074	BACKGROUND			X	
BG-OSL-06 / SS01	8/30/2006	2W1		405066	BACKGROUND			X	
BG-OSL-07 / SS01	8/31/2006	2W1		405075	BACKGROUND			X	
BG-OSL-1000 / SS01	8/31/2006	2W1		405076	BACKGROUND	Field Duplicate of BG-SP-05/SS02	X	X	X
BG-SP-03 / SS01	9/1/2006	2W1		405012	BACKGROUND			X	
BG-SP-03 / SS02	9/1/2006	2W1		405013	BACKGROUND			X	
BG-SP-03 / SS03	9/1/2006	2W1		405014	BACKGROUND			X	
BG-SP-04 / SS01	9/1/2006	2W1		405015	BACKGROUND			X	
BG-SP-04 / SS02	9/1/2006	2W1		405016	BACKGROUND			X	
BG-SP-04 / SS03	9/1/2006	2W1		405017	BACKGROUND			X	
BG-SP-05 / SS01	9/1/2006	2W1		405018	BACKGROUND			X	
BG-SP-05 / SS02	9/1/2006	2W1		405019	BACKGROUND			X	
BG-SP-1000 / SS02	9/1/2006	2W1		405020	BACKGROUND			X	
BG-SP-05 / SS03	9/1/2006	2W1		405021	BACKGROUND	Field Duplicate of BG-SP-05/SS02	X	X	X
BG-SP-06 / SS01	9/1/2006	2W1		405022	BACKGROUND			X	
BG-SP-06 / SS02	9/1/2006	2W1		405023	BACKGROUND			X	
BG-SP-07 / SS01	9/1/2006	2W1		405024	BACKGROUND			X	
BG-SP-07 / SS02	9/1/2006	2W1		405025	BACKGROUND			X	
BG-SP-07 / SS03	9/1/2006	2W1		405026	BACKGROUND			X	
Offsite Soil Samples									
OSL-12A / SS02	9/7/2006	2W1		405091	OFF-SOIL	Field Duplicate of OSL-12E/SS01	X	X	X
OSL-12B / SS01	9/7/2006	2W1		405092	OFF-SOIL			X	
OSL-12B / SS02	9/7/2006	2W1		405093	OFF-SOIL			X	
OSL-12C / SS01	9/7/2006	2W1		405094	OFF-SOIL			X	
OSL-12C / SS02	9/7/2006	2W1		405095	OFF-SOIL			X	
OSL-12D / SS01	9/7/2006	2W1		405096	OFF-SOIL			X	
OSL-12D / SS02	9/7/2006	2W1		405097	OFF-SOIL			X	
OSL-12E / SS01	9/7/2006	2W1		405098	OFF-SOIL			X	
OSL-1006 / SS01	9/7/2006	2W1		405099	OFF-SOIL			X	
OSL-12E / SS02	9/7/2006	2W1		405100	OFF-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples (continued)									
OSL-36A / SS02	9/12/2006	2W2		405675	OFF-SOIL			X	
OSL-36B / SS01	9/12/2006	2W2		405676	OFF-SOIL			X	
OSL-36B / SS02	9/12/2006	2W2		405677	OFF-SOIL			X	
OSL-36C / SS01	9/12/2006	2W2		405678	OFF-SOIL		X	X	X
OSL-36C / SS02	9/12/2006	2W2		405679	OFF-SOIL			X	
OSL-36D / SS01	9/12/2006	2W2		405680	OFF-SOIL			X	
OSL-36D / SS02	9/12/2006	2W2		405681	OFF-SOIL			X	
OSL-36E / SS01	9/12/2006	2W2		405682	OFF-SOIL			X	
OSL-1008 / SS01	9/12/2006	2W2		405683	OFF-SOIL	Field Duplicate of OSL-36E/SS01		X	
OSL-36E / SS02	9/12/2006	2W2		405684	OFF-SOIL			X	
OSL-39A / SS02	9/1/2006	2W1		405080	OFF-SOIL			X	
OSL-39B / SS01	9/5/2006	2W1		405082	OFF-SOIL			X	
OSL-39B / SS02	9/5/2006	2W1		405083	OFF-SOIL			X	
OSL-39C / SS01	9/5/2006	2W1		405084	OFF-SOIL			X	
OSL-1007 / SS01	9/5/2006	2W1		405085	OFF-SOIL	Field Duplicate of OSL-39C/SS01		X	
OSL-39C / SS02	9/5/2006	2W1		405086	OFF-SOIL			X	
OSL-39D / SS01	9/6/2006	2W1		405087	OFF-SOIL			X	
OSL-39D / SS02	9/6/2006	2W1		405088	OFF-SOIL			X	
OSL-39E / SS01	9/6/2006	2W1		405089	OFF-SOIL		X	X	X
OSL-39E / SS02	9/6/2006	2W1		405090	OFF-SOIL			X	
OSL-40A / SS02	8/24/2006	2W1		405036	OFF-SOIL			X	
OSL-40B / SS01	8/24/2006	2W1		405037	OFF-SOIL			X	
OSL-40B / SS02	8/24/2006	2W1		405038	OFF-SOIL			X	
OSL-1009 / SS02	8/24/2006	2W1		405039	OFF-SOIL	Field Duplicate of OSL-40B/SS02		X	
OSL-40C / SS01	8/24/2006	2W1		405040	OFF-SOIL			X	
OSL-40C / SS02	8/24/2006	2W1		405041	OFF-SOIL			X	
OSL-40CC / SS01	9/6/2006	2W1		405125	OFF-SOIL			X	
OSL-40CCC / SS01	9/6/2006	2W1		405124	OFF-SOIL			X	
OSL-40D / SS01	8/24/2006	2W1		405042	OFF-SOIL		X	X	X
OSL-40D / SS02	8/24/2006	2W1		405043	OFF-SOIL			X	
OSL-40DD / SS01	9/6/2006	2W1		405123	OFF-SOIL			X	
OSL-40E / SS01	8/24/2006	2W1		405044	OFF-SOIL			X	
OSL-40E / SS02	8/24/2006	2W1		405045	OFF-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples (continued)									
OSL-49A / SS02	8/24/2006	2W1		405046	OFF-SOIL	Field Duplicate of OSL-49A/SS02		X	
OSL-1010 / SS02	8/24/2006	2W1		405047	OFF-SOIL			X	
OSL-49B / SS01	8/24/2006	2W1		405054	OFF-SOIL			X	
OSL-49B / SS02	8/24/2006	2W1		405055	OFF-SOIL			X	
OSL-49C / SS01	8/24/2006	2W1		405048	OFF-SOIL		X	X	
OSL-49C / SS02	8/24/2006	2W1		405049	OFF-SOIL			X	
OSL-49D / SS01	8/24/2006	2W1		405050	OFF-SOIL			X	
OSL-49D / SS02	8/24/2006	2W1		405051	OFF-SOIL		X	X	X
OSL-49DD / SS01	9/6/2006	2W1		405121	OFF-SOIL			X	
OSL-49E / SS01	8/24/2006	2W1		405052	OFF-SOIL			X	
OSL-49E / SS02	8/24/2006	2W1		405053	OFF-SOIL	Field Duplicate of OSL-96C/SS01		X	
OSL-49EE / SS01	9/6/2006	2W1		405122	OFF-SOIL			X	
OSL-96A / SS02	8/28/2006	2W1		405056	OFF-SOIL			X	
OSL-96C / SS01	8/28/2006	2W1		405057	OFF-SOIL			X	
OSL-1011 / SS01	8/28/2006	2W1		405058	OFF-SOIL			X	
OSL-96C / SS02	8/28/2006	2W1		405059	OFF-SOIL			X	
OSL-96D / SS01	8/28/2006	2W1		405060	OFF-SOIL		X	X	X
OSL-96D / SS02	8/28/2006	2W1		405061	OFF-SOIL			X	
OSL-96E / SS01	8/28/2006	2W1		405062	OFF-SOIL			X	
OSL-96E / SS02	8/28/2006	2W1		405063	OFF-SOIL			X	
OSL-97C / SS02	9/12/2006	2W2		405659	OFF-SOIL	Field Duplicate of OSL-97F/SS02	X	X	X
OSL-97D / SS02	9/12/2006	2W2		405658	OFF-SOIL			X	
OSL-97E / SS01	9/12/2006	2W2		405660	OFF-SOIL			X	
OSL-97E / SS02	9/12/2006	2W2		405661	OFF-SOIL			X	
OSL-97F / SS02	9/12/2006	2W2		405662	OFF-SOIL			X	
OSL-1012 / SS02	9/12/2006	2W2		405663	OFF-SOIL			X	
OSL-97G / SS01	9/12/2006	2W2		405664	OFF-SOIL			X	
OSL-97G / SS02	9/12/2006	2W2		405665	OFF-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples (continued)									
OSL-100 / SS01	8/22/2006	2W1		405027	OFF-SOIL		X	X	
OSL-100 / SS02	8/22/2006	2W1		405028	OFF-SOIL		X	X	
OSL-101 / SS01	8/22/2006	2W1		405029	OFF-SOIL		X	X	
OSL-101 / SS02	8/22/2006	2W1		405030	OFF-SOIL		X	X	
OSL-102 / SS01	8/22/2006	2W1		405034	OFF-SOIL			X	
OSL-102 / SS02	8/22/2006	2W1		405035	OFF-SOIL			X	
OSL-103 / SS01	8/22/2006	2W1		405032	OFF-SOIL			X	
OSL-103 / SS02	8/22/2006	2W1		405033	OFF-SOIL		X	X	X
OSL-1013 / SS02	8/22/2006	2W1		405031	OFF-SOIL	Field Duplicate of OSL-103/SS02	X	X	X
OSL-104 / SS01	8/31/2006	2W1		405067	OFF-SOIL			X	
OSL-105 / SS01	8/31/2006	2W1		405068	OFF-SOIL			X	
OSL-106 / SS01	8/31/2006	2W1		405070	OFF-SOIL			X	
OSL-107 / SS01	8/31/2006	2W1		405069	OFF-SOIL			X	
OSL-108 / SS01	8/31/2006	2W1		405071	OFF-SOIL			X	
OSL-109 / SS01	8/31/2006	2W1		405072	OFF-SOIL			X	
OSL-1014 / SS01	8/31/2006	2W1		405073	OFF-SOIL	Field Duplicate of OSL-109/SS01		X	
OSL-111 / SS01	8/31/2006	2W1		405077	OFF-SOIL			X	
OSL-113 / SS01	8/31/2006	2W1		405078	OFF-SOIL		X	X	X
OSL-114 / SS01	9/12/2006	2W2		405674	OFF-SOIL			X	
OSL-116 / SS01	9/6/2006	2W1		405126	OFF-SOIL			X	
TRB-08A / SS02	9/12/2006	2W2		405666	OFF-SOIL			X	
TRB-1001 / SS01	9/12/2006	2W2		405668	OFF-SOIL	Field Duplicate of TRB-08B/SS01	X	X	X
TRB-08B / SS01	9/12/2006	2W2		405667	OFF-SOIL		X	X	X
TRB-08B / SS02	9/12/2006	2W2		405669	OFF-SOIL			X	
TRB-08C / SS01	9/12/2006	2W2		405670	OFF-SOIL			X	
TRB-08C / SS02	9/12/2006	2W2		405671	OFF-SOIL			X	
TRB-08E / SS01	9/12/2006	2W2		405672	OFF-SOIL			X	
TRB-08E / SS02	9/12/2006	2W2		405673	OFF-SOIL			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Offsite Soil Samples (continued)									
TRB-09A / SS02	9/11/2006	2W2		405652	OFF-SOIL			X	
TRB-09B / SS01	9/11/2006	2W2		405653	OFF-SOIL		X	X	X
TRB-09B / SS02	9/11/2006	2W2		405654	OFF-SOIL			X	
TRB-09E / SS01	9/11/2006	2W2		405655	OFF-SOIL			X	
TRB-09E / SS02	9/11/2006	2W2		405656	OFF-SOIL			X	
TRB-1002 / SS01	9/11/2006	2W2		405657	OFF-SOIL	Field Duplicate of TRB-09E/SS01		X	
TRB-10A / SS02	9/7/2006	2W1		405110	OFF-SOIL		X	X	X
TRB-10B / SS01	9/7/2006	2W1		405108	OFF-SOIL			X	
TRB-10B / SS02	9/7/2006	2W1		405109	OFF-SOIL			X	
TRB-10C / SS01	9/7/2006	2W1		405106	OFF-SOIL			X	
TRB-10C / SS02	9/7/2006	2W1		405107	OFF-SOIL			X	
TRB-10D / SS01	9/7/2006	2W1		405104	OFF-SOIL			X	
TRB-10D / SS02	9/7/2006	2W1		405105	OFF-SOIL			X	
TRB-10E / SS01	9/7/2006	2W1		405101	OFF-SOIL			X	
TRB-10E / SS02	9/7/2006	2W1		405102	OFF-SOIL			X	
TRB-1003 / SS02	9/7/2006	2W1		405103	OFF-SOIL	Field Duplicate of TRB-10E/SS02		X	
TSL-05A / SS02	9/8/2006	2W1		405111	OFF-SOIL		X	X	X
TSL-05B / SS01	9/8/2006	2W1		405112	OFF-SOIL			X	
TSL-05B / SS02	9/8/2006	2W1		405113	OFF-SOIL			X	
TSL-05C / SS01	9/8/2006	2W1		405114	OFF-SOIL			X	
TSL-05C / SS02	9/8/2006	2W1		405115	OFF-SOIL			X	
TSL-05D / SS01	9/8/2006	2W1		405116	OFF-SOIL			X	
TSL-05D / SS02	9/8/2006	2W1		405117	OFF-SOIL			X	
TSL-1001 / SS02	9/8/2006	2W1		405118	OFF-SOIL	Field Duplicate of TSL-05D/SS02		X	
TSL-05E / SS01	9/8/2006	2W1		405119	OFF-SOIL			X	
TSL-05E / SS02	9/8/2006	2W1		405120	OFF-SOIL			X	
TSL-09 / SS01	8/30/2006	2W1		405064	OFF-SOIL			X	
TSL-09 / SS02	8/30/2006	2W1		405065	OFF-SOIL			X	
Sediment Samples									
FP-01 / SD01	9/20/2006	2W1		405888	SEDIMENT			X	
FP-02 / SD01	9/20/2006	2W1		405889	SEDIMENT		X	X	X
FP-1000 / SD01	9/20/2006	2W1		405890	SEDIMENT	Field Duplicate of FP-02/SD01	X	X	X
FP-03 / SD01	9/20/2006	2W1		405891	SEDIMENT			X	

Table 1
Sample Collection Summary
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Database ID	Laboratory ID	Sample Type	Comment	Total Metals (ICP)	Total Metals (XRF)	Total Metals (TCLP)
Onsite Soil Samples									
SP-54 / SS01	8/18/2006	2W1		404994	SITE-SOIL			X	
SP-54 / SS02	8/18/2006	2W1		404995	SITE-SOIL			X	
SP-55 / SS01	8/18/2006	2W1		404997	SITE-SOIL		X	X	X
SP-1015 / SS01	8/18/2006	2W1		404997	SITE-SOIL	Field Duplicate of SP-55/SS01	X	X	X
SP-55 / SS02	8/18/2006	2W1		404998	SITE-SOIL			X	
SP-56 / SS01	8/18/2006	2W1		404999	SITE-SOIL			X	
SP-56 / SS02	8/18/2006	2W1		405000	SITE-SOIL			X	
SP-56 / SS03	8/18/2006	2W1		405001	SITE-SOIL			X	
SP-57 / SS01	8/18/2006	2W1		405002	SITE-SOIL			X	
SP-57 / SS02	8/18/2006	2W1		405003	SITE-SOIL			X	
SP-58 / SS01	8/18/2006	2W1		405004	SITE-SOIL			X	
SP-58 / SS02	8/18/2006	2W1		405005	SITE-SOIL			X	
SP-59 / SS01	8/18/2006	2W1		405006	SITE-SOIL			X	
SP-59 / SS02	8/18/2006	2W1		405007	SITE-SOIL			X	
SP-59 / SS03	8/18/2006	2W1		405008	SITE-SOIL			X	
SP-60 / SS01	8/18/2006	2W1		405009	SITE-SOIL		X	X	X
SP-60 / SS02	8/18/2006	2W1		45010	SITE-SOIL			X	
SP-1016 / SS02	8/18/2006	2W1		405011	SITE-SOIL	Field Duplicate of SP-60/SS02		X	

Notes:

1.) Metals analyzed by ICP and XRF include cadmium, lead, zinc, and arsenic. Metals analyzed by TCLP include cadmium, arsenic, and lead.

ICP = Inductively Coupled Plasma

ID = Identification

SDG = Sample Delivery Group

TCLP = Toxicity Characteristic Leaching Procedure

X = Sample was collected

XRF = X-Ray Fluorescence

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Background Samples								
BG-OSL-03 / SS01	9/1/2006	405081	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-03 / SS01	9/1/2006	405081	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-03 / SS01	9/1/2006	405081	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OSL-03 / SS01	9/1/2006	405081	METAL	Zinc, Total (XRF)	mg/kg	50	U	
BG-OSL-04 / SS01	8/31/2006	405079	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-04 / SS01	8/31/2006	405079	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-04 / SS01	8/31/2006	405079	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OSL-04 / SS01	8/31/2006	405079	METAL	Zinc, Total (XRF)	mg/kg	99.5		
BG-OSL-05 / SS01	8/31/2006	405074	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-05 / SS01	8/31/2006	405074	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-05 / SS01	8/31/2006	405074	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OSL-05 / SS01	8/31/2006	405074	METAL	Zinc, Total (XRF)	mg/kg	64		
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Lead, Total (ICP)	mg/kg	22		
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Zinc, Total (ICP)	mg/kg	67		
BG-OSL-06 / SS01	8/30/2006	405066	METAL	Zinc, Total (XRF)	mg/kg	113		
BG-OSL-06 / SS01	8/30/2006	405066	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
BG-OSL-06 / SS01	8/30/2006	405066	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
BG-OSL-06 / SS01	8/30/2006	405066	TCLPMET	Lead, TCLP	mg/L	0.05	U	
BG-OSL-07 / SS01	8/31/2006	405075	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-07 / SS01	8/31/2006	405075	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-07 / SS01	8/31/2006	405075	METAL	Lead, Total (XRF)	mg/kg	22.4		
BG-OSL-07 / SS01	8/31/2006	405075	METAL	Zinc, Total (XRF)	mg/kg	120		
BG-OSL-1000 / SS01	8/31/2006	405076	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-OSL-1000 / SS01	8/31/2006	405076	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-OSL-1000 / SS01	8/31/2006	405076	METAL	Lead, Total (XRF)	mg/kg	20.1		
BG-OSL-1000 / SS01	8/31/2006	405076	METAL	Zinc, Total (XRF)	mg/kg	110		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Background Samples (continued)								
BG-SP-03 / SS01	9/1/2006	405012	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS01	9/1/2006	405012	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS01	9/1/2006	405012	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-03 / SS01	9/1/2006	405012	METAL	Zinc, Total (XRF)	mg/kg	50	U	
BG-SP-03 / SS02	9/1/2006	405013	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS02	9/1/2006	405013	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS02	9/1/2006	405013	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-03 / SS02	9/1/2006	405013	METAL	Zinc, Total (XRF)	mg/kg	50	U	
BG-SP-03 / SS03	9/1/2006	405014	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS03	9/1/2006	405014	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-03 / SS03	9/1/2006	405014	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-03 / SS03	9/1/2006	405014	METAL	Zinc, Total (XRF)	mg/kg	59.7		
BG-SP-04 / SS01	9/1/2006	405015	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
BG-SP-04 / SS01	9/1/2006	405015	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS01	9/1/2006	405015	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
BG-SP-04 / SS01	9/1/2006	405015	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS01	9/1/2006	405015	METAL	Lead, Total (ICP)	mg/kg	12		
BG-SP-04 / SS01	9/1/2006	405015	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-04 / SS01	9/1/2006	405015	METAL	Zinc, Total (ICP)	mg/kg	45		
BG-SP-04 / SS01	9/1/2006	405015	METAL	Zinc, Total (XRF)	mg/kg	77.7		
BG-SP-04 / SS01	9/1/2006	405015	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
BG-SP-04 / SS01	9/1/2006	405015	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
BG-SP-04 / SS01	9/1/2006	405015	TCLPMET	Lead, TCLP	mg/L	0.05	U	
BG-SP-04 / SS02	9/1/2006	405016	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS02	9/1/2006	405016	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS02	9/1/2006	405016	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-04 / SS02	9/1/2006	405016	METAL	Zinc, Total (XRF)	mg/kg	71.8		
BG-SP-04 / SS03	9/1/2006	405017	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS03	9/1/2006	405017	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-04 / SS03	9/1/2006	405017	METAL	Lead, Total (XRF)	mg/kg	34.7		
BG-SP-04 / SS03	9/1/2006	405017	METAL	Zinc, Total (XRF)	mg/kg	115		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Background Samples (continued)								
BG-SP-05 / SS01	9/1/2006	405018	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS01	9/1/2006	405018	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS01	9/1/2006	405018	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-05 / SS01	9/1/2006	405018	METAL	Zinc, Total (XRF)	mg/kg	57.4		
BG-SP-05 / SS02	9/1/2006	405019	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS02	9/1/2006	405019	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS02	9/1/2006	405019	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-05 / SS02	9/1/2006	405019	METAL	Zinc, Total (XRF)	mg/kg	58.1		
BG-SP-1000 / SS02	9/1/2006	405020	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-1000 / SS02	9/1/2006	405020	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-1000 / SS02	9/1/2006	405020	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-1000 / SS02	9/1/2006	405020	METAL	Zinc, Total (XRF)	mg/kg	55.8		
BG-SP-05 / SS03	9/1/2006	405021	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS03	9/1/2006	405021	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-05 / SS03	9/1/2006	405021	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-05 / SS03	9/1/2006	405021	METAL	Zinc, Total (XRF)	mg/kg	56.6		
BG-SP-06 / SS01	9/1/2006	405022	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-06 / SS01	9/1/2006	405022	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-06 / SS01	9/1/2006	405022	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-06 / SS01	9/1/2006	405022	METAL	Zinc, Total (XRF)	mg/kg	122		
BG-SP-06 / SS02	9/1/2006	405023	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-06 / SS02	9/1/2006	405023	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-06 / SS02	9/1/2006	405023	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-06 / SS02	9/1/2006	405023	METAL	Zinc, Total (XRF)	mg/kg	96.5		
BG-SP-07 / SS01	9/1/2006	405024	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
BG-SP-07 / SS01	9/1/2006	405024	METAL	Cadmium, Total (XRF)	mg/kg	10	U	J*
BG-SP-07 / SS01	9/1/2006	405024	METAL	Lead, Total (XRF)	mg/kg	28.6		
BG-SP-07 / SS01	9/1/2006	405024	METAL	Zinc, Total (XRF)	mg/kg	196		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Background Samples (continued)								
BG-SP-07 / SS02	9/1/2006	405025	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
BG-SP-07 / SS02	9/1/2006	405025	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-07 / SS02	9/1/2006	405025	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-07 / SS02	9/1/2006	405025	METAL	Zinc, Total (XRF)	mg/kg	120		
BG-SP-07 / SS03	9/1/2006	405026	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
BG-SP-07 / SS03	9/1/2006	405026	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
BG-SP-07 / SS03	9/1/2006	405026	METAL	Lead, Total (XRF)	mg/kg	20	U	
BG-SP-07 / SS03	9/1/2006	405026	METAL	Zinc, Total (XRF)	mg/kg	50	U	
Offsite Soil Samples								
OSL-12A / SS02	9/7/2006	405091	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-12A / SS02	9/7/2006	405091	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-12A / SS02	9/7/2006	405091	METAL	Lead, Total (XRF)	mg/kg	63		
OSL-12A / SS02	9/7/2006	405091	METAL	Zinc, Total (XRF)	mg/kg	655		
OSL-12B / SS01	9/7/2006	405092	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-12B / SS01	9/7/2006	405092	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-12B / SS01	9/7/2006	405092	METAL	Lead, Total (XRF)	mg/kg	25.6		
OSL-12B / SS01	9/7/2006	405092	METAL	Zinc, Total (XRF)	mg/kg	209		
OSL-12B / SS02	9/7/2006	405093	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-12B / SS02	9/7/2006	405093	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-12B / SS02	9/7/2006	405093	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-12B / SS02	9/7/2006	405093	METAL	Zinc, Total (XRF)	mg/kg	92.4		
OSL-12C / SS01	9/7/2006	405094	METAL	Arsenic, Total (XRF)	mg/kg	20.2	U	
OSL-12C / SS01	9/7/2006	405094	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-12C / SS01	9/7/2006	405094	METAL	Lead, Total (XRF)	mg/kg	210		
OSL-12C / SS01	9/7/2006	405094	METAL	Zinc, Total (XRF)	mg/kg	669		
OSL-12C / SS02	9/7/2006	405095	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-12C / SS02	9/7/2006	405095	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-12C / SS02	9/7/2006	405095	METAL	Lead, Total (XRF)	mg/kg	58.4		
OSL-12C / SS02	9/7/2006	405095	METAL	Zinc, Total (XRF)	mg/kg	480		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-12D / SS01	9/7/2006	405096	METAL	Arsenic, Total (XRF)	mg/kg	19.7	U	
OSL-12D / SS01	9/7/2006	405096	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-12D / SS01	9/7/2006	405096	METAL	Lead, Total (XRF)	mg/kg	201		
OSL-12D / SS01	9/7/2006	405096	METAL	Zinc, Total (XRF)	mg/kg	643		
OSL-12D / SS02	9/7/2006	405097	METAL	Arsenic, Total (XRF)	mg/kg	10.5	U	
OSL-12D / SS02	9/7/2006	405097	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-12D / SS02	9/7/2006	405097	METAL	Lead, Total (XRF)	mg/kg	108		
OSL-12D / SS02	9/7/2006	405097	METAL	Zinc, Total (XRF)	mg/kg	597		
OSL-12E / SS01	9/7/2006	405098	METAL	Arsenic, Total (XRF)	mg/kg	13.6	U	
OSL-12E / SS01	9/7/2006	405098	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-12E / SS01	9/7/2006	405098	METAL	Lead, Total (XRF)	mg/kg	122		
OSL-12E / SS01	9/7/2006	405098	METAL	Zinc, Total (XRF)	mg/kg	557		
OSL-1006 / SS01	9/7/2006	405099	METAL	Arsenic, Total (XRF)	mg/kg	13.2	U	
OSL-1006 / SS01	9/7/2006	405099	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-1006 / SS01	9/7/2006	405099	METAL	Lead, Total (XRF)	mg/kg	102		
OSL-1006 / SS01	9/7/2006	405099	METAL	Zinc, Total (XRF)	mg/kg	430		
OSL-12E / SS02	9/7/2006	405100	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-12E / SS02	9/7/2006	405100	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-12E / SS02	9/7/2006	405100	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-12E / SS02	9/7/2006	405100	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-12E / SS02	9/7/2006	405100	METAL	Lead, Total (ICP)	mg/kg	77	U	
OSL-12E / SS02	9/7/2006	405100	METAL	Lead, Total (XRF)	mg/kg	102		
OSL-12E / SS02	9/7/2006	405100	METAL	Zinc, Total (ICP)	mg/kg	292		
OSL-12E / SS02	9/7/2006	405100	METAL	Zinc, Total (XRF)	mg/kg	430		
OSL-12E / SS02	9/7/2006	405100	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-12E / SS02	9/7/2006	405100	TCLPMET	Cadmium, TCLP	mg/L	0.012	U	
OSL-12E / SS02	9/7/2006	405100	TCLPMET	Lead, TCLP	mg/L	0.05		
OSL-36A / SS02	9/12/2006	405675	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-36A / SS02	9/12/2006	405675	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36A / SS02	9/12/2006	405675	METAL	Lead, Total (XRF)	mg/kg	34.3		
OSL-36A / SS02	9/12/2006	405675	METAL	Zinc, Total (XRF)	mg/kg	361		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-36B / SS01	9/12/2006	405676	METAL	Arsenic, Total (XRF)	mg/kg	11.7	U	
OSL-36B / SS01	9/12/2006	405676	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-36B / SS01	9/12/2006	405676	METAL	Lead, Total (XRF)	mg/kg	183		
OSL-36B / SS01	9/12/2006	405676	METAL	Zinc, Total (XRF)	mg/kg	826		
OSL-36B / SS02	9/12/2006	405677	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-36B / SS02	9/12/2006	405677	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36B / SS02	9/12/2006	405677	METAL	Lead, Total (XRF)	mg/kg	66.9		
OSL-36B / SS02	9/12/2006	405677	METAL	Zinc, Total (XRF)	mg/kg	822		
OSL-36C / SS01	9/12/2006	405678	METAL	Arsenic, Total (ICP)	mg/kg	12	U	
OSL-36C / SS01	9/12/2006	405678	METAL	Arsenic, Total (XRF)	mg/kg	30.1		
OSL-36C / SS01	9/12/2006	405678	METAL	Cadmium, Total (ICP)	mg/kg	7		
OSL-36C / SS01	9/12/2006	405678	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-36C / SS01	9/12/2006	405678	METAL	Lead, Total (ICP)	mg/kg	286	U	
OSL-36C / SS01	9/12/2006	405678	METAL	Lead, Total (XRF)	mg/kg	373		
OSL-36C / SS01	9/12/2006	405678	METAL	Zinc, Total (ICP)	mg/kg	811		
OSL-36C / SS01	9/12/2006	405678	METAL	Zinc, Total (XRF)	mg/kg	1090		
OSL-36C / SS01	9/12/2006	405678	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-36C / SS01	9/12/2006	405678	TCLPMET	Cadmium, TCLP	mg/L	0.071		
OSL-36C / SS01	9/12/2006	405678	TCLPMET	Lead, TCLP	mg/L	0.115		
OSL-36C / SS02	9/12/2006	405679	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-36C / SS02	9/12/2006	405679	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36C / SS02	9/12/2006	405679	METAL	Lead, Total (XRF)	mg/kg	64.4		
OSL-36C / SS02	9/12/2006	405679	METAL	Zinc, Total (XRF)	mg/kg	564		
OSL-36D / SS01	9/12/2006	405680	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-36D / SS01	9/12/2006	405680	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36D / SS01	9/12/2006	405680	METAL	Lead, Total (XRF)	mg/kg	118		
OSL-36D / SS01	9/12/2006	405680	METAL	Zinc, Total (XRF)	mg/kg	535		
OSL-36D / SS02	9/12/2006	405681	METAL	Arsenic, Total (XRF)	mg/kg	14.5	U	
OSL-36D / SS02	9/12/2006	405681	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-36D / SS02	9/12/2006	405681	METAL	Lead, Total (XRF)	mg/kg	156		
OSL-36D / SS02	9/12/2006	405681	METAL	Zinc, Total (XRF)	mg/kg	657		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-36E / SS01	9/12/2006	405682	METAL	Arsenic, Total (XRF)	mg/kg	53.2		
OSL-36E / SS01	9/12/2006	405682	METAL	Cadmium, Total (XRF)	mg/kg	20.8		
OSL-36E / SS01	9/12/2006	405682	METAL	Lead, Total (XRF)	mg/kg	734		
OSL-36E / SS01	9/12/2006	405682	METAL	Zinc, Total (XRF)	mg/kg	2410		
OSL-36E / SS01	9/12/2006	405683	METAL	Arsenic, Total (XRF)	mg/kg	56		
OSL-36E / SS01	9/12/2006	405683	METAL	Cadmium, Total (XRF)	mg/kg	19.9		
OSL-36E / SS01	9/12/2006	405683	METAL	Lead, Total (XRF)	mg/kg	670		
OSL-36E / SS01	9/12/2006	405683	METAL	Zinc, Total (XRF)	mg/kg	56		
OSL-36E / SS02	9/12/2006	405684	METAL	Arsenic, Total (XRF)	mg/kg	14.2		
OSL-36E / SS02	9/12/2006	405684	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-36E / SS02	9/12/2006	405684	METAL	Lead, Total (XRF)	mg/kg	230		
OSL-36E / SS02	9/12/2006	405684	METAL	Zinc, Total (XRF)	mg/kg	869		
OSL-39A / SS02	9/1/2006	405080	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-39A / SS02	9/1/2006	405080	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-39A / SS02	9/1/2006	405080	METAL	Lead, Total (XRF)	mg/kg	20.6		
OSL-39A / SS02	9/1/2006	405080	METAL	Zinc, Total (XRF)	mg/kg	347		
OSL-39B / SS01	9/5/2006	405082	METAL	Arsenic, Total (XRF)	mg/kg	27.8		
OSL-39B / SS01	9/5/2006	405082	METAL	Cadmium, Total (XRF)	mg/kg	12.6		
OSL-39B / SS01	9/5/2006	405082	METAL	Lead, Total (XRF)	mg/kg	329		
OSL-39B / SS01	9/5/2006	405082	METAL	Zinc, Total (XRF)	mg/kg	1270		
OSL-39B / SS02	9/5/2006	405083	METAL	Arsenic, Total (XRF)	mg/kg	36.3		
OSL-39B / SS02	9/5/2006	405083	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-39B / SS02	9/5/2006	405083	METAL	Lead, Total (XRF)	mg/kg	460		
OSL-39B / SS02	9/5/2006	405083	METAL	Zinc, Total (XRF)	mg/kg	36.3		
OSL-39C / SS01	9/5/2006	405084	METAL	Arsenic, Total (XRF)	mg/kg	23.3		
OSL-39C / SS01	9/5/2006	405084	METAL	Cadmium, Total (XRF)	mg/kg	13.9		
OSL-39C / SS01	9/5/2006	405084	METAL	Lead, Total (XRF)	mg/kg	257		
OSL-39C / SS01	9/5/2006	405084	METAL	Zinc, Total (XRF)	mg/kg	1230		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-1007 / SS01	9/5/2006	405085	METAL	Arsenic, Total (XRF)	mg/kg	21.5	U	
OSL-1007 / SS01	9/5/2006	405085	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-1007 / SS01	9/5/2006	405085	METAL	Lead, Total (XRF)	mg/kg	255		
OSL-1007 / SS01	9/5/2006	405085	METAL	Zinc, Total (XRF)	mg/kg	1160		
OSL-39C / SS02	9/5/2006	405086	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-39C / SS02	9/5/2006	405086	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-39C / SS02	9/5/2006	405086	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-39C / SS02	9/5/2006	405086	METAL	Zinc, Total (XRF)	mg/kg	492		
OSL-39D / SS01	9/6/2006	405087	METAL	Arsenic, Total (XRF)	mg/kg	88.4		
OSL-39D / SS01	9/6/2006	405087	METAL	Cadmium, Total (XRF)	mg/kg	31.3		
OSL-39D / SS01	9/6/2006	405087	METAL	Lead, Total (XRF)	mg/kg	1060		
OSL-39D / SS01	9/6/2006	405087	METAL	Zinc, Total (XRF)	mg/kg	3580		
OSL-39D / SS02	9/6/2006	405088	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-39D / SS02	9/6/2006	405088	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-39D / SS02	9/6/2006	405088	METAL	Lead, Total (XRF)	mg/kg	36.5		
OSL-39D / SS02	9/6/2006	405088	METAL	Zinc, Total (XRF)	mg/kg	421		
OSL-39E / SS01	9/6/2006	405089	METAL	Arsenic, Total (ICP)	mg/kg	23	U	
OSL-39E / SS01	9/6/2006	405089	METAL	Arsenic, Total (XRF)	mg/kg	75.6		
OSL-39E / SS01	9/6/2006	405089	METAL	Cadmium, Total (ICP)	mg/kg	19		
OSL-39E / SS01	9/6/2006	405089	METAL	Cadmium, Total (XRF)	mg/kg	28.3		
OSL-39E / SS01	9/6/2006	405089	METAL	Lead, Total (ICP)	mg/kg	700		
OSL-39E / SS01	9/6/2006	405089	METAL	Lead, Total (XRF)	mg/kg	927		
OSL-39E / SS01	9/6/2006	405089	METAL	Zinc, Total (ICP)	mg/kg	2360		
OSL-39E / SS01	9/6/2006	405089	METAL	Zinc, Total (XRF)	mg/kg	3180		
OSL-39E / SS01	9/6/2006	405089	TCLPMET	Arsenic, TCLP	mg/L	0.05		
OSL-39E / SS01	9/6/2006	405089	TCLPMET	Cadmium, TCLP	mg/L	0.191		
OSL-39E / SS01	9/6/2006	405089	TCLPMET	Lead, TCLP	mg/L	0.268		
OSL-39E / SS02	9/6/2006	405090	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-39E / SS02	9/6/2006	405090	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-39E / SS02	9/6/2006	405090	METAL	Lead, Total (XRF)	mg/kg	22.9		
OSL-39E / SS02	9/6/2006	405090	METAL	Zinc, Total (XRF)	mg/kg	413		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-40A / SS02	8/24/2006	405036	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
OSL-40A / SS02	8/24/2006	405036	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40A / SS02	8/24/2006	405036	METAL	Lead, Total (XRF)	mg/kg	94.6		
OSL-40A / SS02	8/24/2006	405036	METAL	Zinc, Total (XRF)	mg/kg	714		
OSL-40B / SS01	8/24/2006	405037	METAL	Arsenic, Total (XRF)	mg/kg	23.8	U	J*
OSL-40B / SS01	8/24/2006	405037	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-40B / SS01	8/24/2006	405037	METAL	Lead, Total (XRF)	mg/kg	342		
OSL-40B / SS01	8/24/2006	405037	METAL	Zinc, Total (XRF)	mg/kg	1050		
OSL-40B / SS02	8/24/2006	405038	METAL	Arsenic, Total (XRF)	mg/kg	10	U	J*
OSL-40B / SS02	8/24/2006	405038	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40B / SS02	8/24/2006	405038	METAL	Lead, Total (XRF)	mg/kg	29.6		
OSL-40B / SS02	8/24/2006	405038	METAL	Zinc, Total (XRF)	mg/kg	193		
OSL-1009 / SS02	8/24/2006	405039	METAL	Arsenic, Total (XRF)	mg/kg	10	U	U
OSL-1009 / SS02	8/24/2006	405039	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1009 / SS02	8/24/2006	405039	METAL	Lead, Total (XRF)	mg/kg	87.1		
OSL-1009 / SS02	8/24/2006	405039	METAL	Zinc, Total (XRF)	mg/kg	295		
OSL-40C / SS01	8/24/2006	405040	METAL	Arsenic, Total (XRF)	mg/kg	86.5		
OSL-40C / SS01	8/24/2006	405040	METAL	Cadmium, Total (XRF)	mg/kg	12.8		
OSL-40C / SS01	8/24/2006	405040	METAL	Lead, Total (XRF)	mg/kg	1340		
OSL-40C / SS01	8/24/2006	405040	METAL	Zinc, Total (XRF)	mg/kg	2620		
OSL-40C / SS02	8/24/2006	405041	METAL	Arsenic, Total (XRF)	mg/kg	10	U	U
OSL-40C / SS02	8/24/2006	405041	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40C / SS02	8/24/2006	405041	METAL	Lead, Total (XRF)	mg/kg	104		
OSL-40C / SS02	8/24/2006	405041	METAL	Zinc, Total (XRF)	mg/kg	1040		
OSL-40CC / SS01	9/6/2006	405125	METAL	Arsenic, Total (XRF)	mg/kg	34.2		
OSL-40CC / SS01	9/6/2006	405125	METAL	Cadmium, Total (XRF)	mg/kg	12.9		
OSL-40CC / SS01	9/6/2006	405125	METAL	Lead, Total (XRF)	mg/kg	361		
OSL-40CC / SS01	9/6/2006	405125	METAL	Zinc, Total (XRF)	mg/kg	1380		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-40CCC / SS01	9/6/2006	405124	METAL	Arsenic, Total (XRF)	mg/kg	64.5		
OSL-40CCC / SS01	9/6/2006	405124	METAL	Cadmium, Total (XRF)	mg/kg	16.8		
OSL-40CCC / SS01	9/6/2006	405124	METAL	Lead, Total (XRF)	mg/kg	640		
OSL-40CCC / SS01	9/6/2006	405124	METAL	Zinc, Total (XRF)	mg/kg	3240		
OSL-40D / SS01	8/24/2006	405042	METAL	Arsenic, Total (ICP)	mg/kg	74		
OSL-40D / SS01	8/24/2006	405042	METAL	Arsenic, Total (XRF)	mg/kg	136		
OSL-40D / SS01	8/24/2006	405042	METAL	Cadmium, Total (ICP)	mg/kg	26		
OSL-40D / SS01	8/24/2006	405042	METAL	Cadmium, Total (XRF)	mg/kg	36.4		
OSL-40D / SS01	8/24/2006	405042	METAL	Lead, Total (ICP)	mg/kg	1520		
OSL-40D / SS01	8/24/2006	405042	METAL	Lead, Total (XRF)	mg/kg	1980		
OSL-40D / SS01	8/24/2006	405042	METAL	Zinc, Total (ICP)	mg/kg	4810		
OSL-40D / SS01	8/24/2006	405042	METAL	Zinc, Total (XRF)	mg/kg	6550		
OSL-40D / SS01	8/24/2006	405042	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-40D / SS01	8/24/2006	405042	TCLPMET	Cadmium, TCLP	mg/L	0.359		
OSL-40D / SS01	8/24/2006	405042	TCLPMET	Lead, TCLP	mg/L	1.3		
OSL-40D / SS02	8/24/2006	405043	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-40D / SS02	8/24/2006	405043	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40D / SS02	8/24/2006	405043	METAL	Lead, Total (XRF)	mg/kg	108		
OSL-40D / SS02	8/24/2006	405043	METAL	Zinc, Total (XRF)	mg/kg	1230		
OSL-40DD / SS01	9/6/2006	405123	METAL	Arsenic, Total (XRF)	mg/kg	107		
OSL-40DD / SS01	9/6/2006	405123	METAL	Cadmium, Total (XRF)	mg/kg	21.4		
OSL-40DD / SS01	9/6/2006	405123	METAL	Lead, Total (XRF)	mg/kg	1340		
OSL-40DD / SS01	9/6/2006	405123	METAL	Zinc, Total (XRF)	mg/kg	2930		
OSL-40E / SS01	8/24/2006	405044	METAL	Arsenic, Total (XRF)	mg/kg	10.2		
OSL-40E / SS01	8/24/2006	405044	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40E / SS01	8/24/2006	405044	METAL	Lead, Total (XRF)	mg/kg	198		
OSL-40E / SS01	8/24/2006	405044	METAL	Zinc, Total (XRF)	mg/kg	858		
OSL-40E / SS02	8/24/2006	405045	METAL	Arsenic, Total (XRF)	mg/kg	27.8		
OSL-40E / SS02	8/24/2006	405045	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-40E / SS02	8/24/2006	405045	METAL	Lead, Total (XRF)	mg/kg	363		
OSL-40E / SS02	8/24/2006	405045	METAL	Zinc, Total (XRF)	mg/kg	1250		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-49A / SS02	8/24/2006	405046	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49A / SS02	8/24/2006	405046	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49A / SS02	8/24/2006	405046	METAL	Lead, Total (XRF)	mg/kg	92.8		
OSL-49A / SS02	8/24/2006	405046	METAL	Zinc, Total (XRF)	mg/kg	506		
OSL-1010 / SS02	8/24/2006	405047	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-1010 / SS02	8/24/2006	405047	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1010 / SS02	8/24/2006	405047	METAL	Lead, Total (XRF)	mg/kg	130		
OSL-1010 / SS02	8/24/2006	405047	METAL	Zinc, Total (XRF)	mg/kg	577		
OSL-49B / SS01	8/24/2006	405054	METAL	Arsenic, Total (XRF)	mg/kg	14.6		
OSL-49B / SS01	8/24/2006	405054	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49B / SS01	8/24/2006	405054	METAL	Lead, Total (XRF)	mg/kg	210		
OSL-49B / SS01	8/24/2006	405054	METAL	Zinc, Total (XRF)	mg/kg	836		
OSL-49B / SS02	8/24/2006	405055	METAL	Arsenic, Total (XRF)	mg/kg	10		
OSL-49B / SS02	8/24/2006	405055	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49B / SS02	8/24/2006	405055	METAL	Lead, Total (XRF)	mg/kg	134		
OSL-49B / SS02	8/24/2006	405055	METAL	Zinc, Total (XRF)	mg/kg	543		
OSL-49C / SS01	8/24/2006	405048	METAL	Arsenic, Total (ICP)	mg/kg	49		
OSL-49C / SS01	8/24/2006	405048	METAL	Arsenic, Total (XRF)	mg/kg	144		
OSL-49C / SS01	8/24/2006	405048	METAL	Cadmium, Total (ICP)	mg/kg	89		
OSL-49C / SS01	8/24/2006	405048	METAL	Cadmium, Total (XRF)	mg/kg	127		
OSL-49C / SS01	8/24/2006	405048	METAL	Lead, Total (ICP)	mg/kg	1680		
OSL-49C / SS01	8/24/2006	405048	METAL	Lead, Total (XRF)	mg/kg	2220		
OSL-49C / SS01	8/24/2006	405048	METAL	Zinc, Total (ICP)	mg/kg	8090		
OSL-49C / SS01	8/24/2006	405048	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OSL-49C / SS02	8/24/2006	405049	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49C / SS02	8/24/2006	405049	METAL	Cadmium, Total (XRF)	mg/kg	38.6		
OSL-49C / SS02	8/24/2006	405049	METAL	Lead, Total (XRF)	mg/kg	72.2		
OSL-49C / SS02	8/24/2006	405049	METAL	Zinc, Total (XRF)	mg/kg	1560		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-49D / SS01	8/24/2006	405050	METAL	Arsenic, Total (XRF)	mg/kg	32		
OSL-49D / SS01	8/24/2006	405050	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49D / SS01	8/24/2006	405050	METAL	Lead, Total (XRF)	mg/kg	503		
OSL-49D / SS01	8/24/2006	405050	METAL	Zinc, Total (XRF)	mg/kg	1360		
OSL-49D / SS02	8/24/2006	405051	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-49D / SS02	8/24/2006	405051	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49D / SS02	8/24/2006	405051	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-49D / SS02	8/24/2006	405051	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49D / SS02	8/24/2006	405051	METAL	Lead, Total (ICP)	mg/kg	17		
OSL-49D / SS02	8/24/2006	405051	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-49D / SS02	8/24/2006	405051	METAL	Zinc, Total (ICP)	mg/kg	151		
OSL-49D / SS02	8/24/2006	405051	METAL	Zinc, Total (XRF)	mg/kg	216		
OSL-49D / SS02	8/24/2006	405051	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-49D / SS02	8/24/2006	405051	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-49D / SS02	8/24/2006	405051	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-49DD / SS01	9/6/2006	405121	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49DD / SS01	9/6/2006	405121	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49DD / SS01	9/6/2006	405121	METAL	Lead, Total (XRF)	mg/kg	69.5		
OSL-49DD / SS01	9/6/2006	405121	METAL	Zinc, Total (XRF)	mg/kg	413		
OSL-49E / SS01	8/24/2006	405052	METAL	Arsenic, Total (XRF)	mg/kg	16.7		
OSL-49E / SS01	8/24/2006	405052	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49E / SS01	8/24/2006	405052	METAL	Lead, Total (XRF)	mg/kg	290		
OSL-49E / SS01	8/24/2006	405052	METAL	Zinc, Total (XRF)	mg/kg	1060		
OSL-49E / SS02	8/24/2006	405053	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49E / SS02	8/24/2006	405053	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49E / SS02	8/24/2006	405053	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-49E / SS02	8/24/2006	405053	METAL	Zinc, Total (XRF)	mg/kg	162		
OSL-49EE / SS01	9/6/2006	405122	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-49EE / SS01	9/6/2006	405122	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-49EE / SS01	9/6/2006	405122	METAL	Lead, Total (XRF)	mg/kg	17.2		
OSL-49EE / SS01	9/6/2006	405122	METAL	Zinc, Total (XRF)	mg/kg	263		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
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Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-96A / SS02	8/28/2006	405056	METAL	Arsenic, Total (XRF)	mg/kg	23.3	U	
OSL-96A / SS02	8/28/2006	405056	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-96A / SS02	8/28/2006	405056	METAL	Lead, Total (XRF)	mg/kg	261		
OSL-96A / SS02	8/28/2006	405056	METAL	Zinc, Total (XRF)	mg/kg	864		
OSL-96C / SS01	8/28/2006	405057	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-96C / SS01	8/28/2006	405057	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-96C / SS01	8/28/2006	405057	METAL	Lead, Total (XRF)	mg/kg	140		
OSL-96C / SS01	8/28/2006	405057	METAL	Zinc, Total (XRF)	mg/kg	556		
OSL-1011 / SS01	8/28/2006	405058	METAL	Arsenic, Total (XRF)	mg/kg	13.1	U	
OSL-1011 / SS01	8/28/2006	405058	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-1011 / SS01	8/28/2006	405058	METAL	Lead, Total (XRF)	mg/kg	145		
OSL-1011 / SS01	8/28/2006	405058	METAL	Zinc, Total (XRF)	mg/kg	548		
OSL-96C / SS02	8/28/2006	405059	METAL	Arsenic, Total (XRF)	mg/kg	11	U	
OSL-96C / SS02	8/28/2006	405059	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-96C / SS02	8/28/2006	405059	METAL	Lead, Total (XRF)	mg/kg	138		
OSL-96C / SS02	8/28/2006	405059	METAL	Zinc, Total (XRF)	mg/kg	477		
OSL-96D / SS01	8/28/2006	405060	METAL	Arsenic, Total (ICP)	mg/kg	23	U	
OSL-96D / SS01	8/28/2006	405060	METAL	Arsenic, Total (XRF)	mg/kg	42.6		
OSL-96D / SS01	8/28/2006	405060	METAL	Cadmium, Total (ICP)	mg/kg	2		
OSL-96D / SS01	8/28/2006	405060	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-96D / SS01	8/28/2006	405060	METAL	Lead, Total (ICP)	mg/kg	425		
OSL-96D / SS01	8/28/2006	405060	METAL	Lead, Total (XRF)	mg/kg	503		
OSL-96D / SS01	8/28/2006	405060	METAL	Zinc, Total (ICP)	mg/kg	746		
OSL-96D / SS01	8/28/2006	405060	METAL	Zinc, Total (XRF)	mg/kg	966		
OSL-96D / SS01	8/28/2006	405060	TCLPMET	Arsenic, TCLP	mg/L	0.05		
OSL-96D / SS01	8/28/2006	405060	TCLPMET	Cadmium, TCLP	mg/L	0.015		
OSL-96D / SS01	8/28/2006	405060	TCLPMET	Lead, TCLP	mg/L	0.094		
OSL-96D / SS02	8/28/2006	405061	METAL	Arsenic, Total (XRF)	mg/kg	119	U	
OSL-96D / SS02	8/28/2006	405061	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-96D / SS02	8/28/2006	405061	METAL	Lead, Total (XRF)	mg/kg	1430		
OSL-96D / SS02	8/28/2006	405061	METAL	Zinc, Total (XRF)	mg/kg	1860		

Table 2
Data Qualifiers
Soil and Sediment Samples
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Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-96E / SS01	8/28/2006	405062	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-96E / SS01	8/28/2006	405062	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-96E / SS01	8/28/2006	405062	METAL	Lead, Total (XRF)	mg/kg	37.5		
OSL-96E / SS01	8/28/2006	405062	METAL	Zinc, Total (XRF)	mg/kg	194		
OSL-96E / SS02	8/28/2006	405063	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-96E / SS02	8/28/2006	405063	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-96E / SS02	8/28/2006	405063	METAL	Lead, Total (XRF)	mg/kg	73		
OSL-96E / SS02	8/28/2006	405063	METAL	Zinc, Total (XRF)	mg/kg	298		
OSL-97C / SS02	9/12/2006	405659	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-97C / SS02	9/12/2006	405659	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-97C / SS02	9/12/2006	405659	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-97C / SS02	9/12/2006	405659	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97C / SS02	9/12/2006	405659	METAL	Lead, Total (ICP)	mg/kg	52		
OSL-97C / SS02	9/12/2006	405659	METAL	Lead, Total (XRF)	mg/kg	35		
OSL-97C / SS02	9/12/2006	405659	METAL	Zinc, Total (ICP)	mg/kg	149		
OSL-97C / SS02	9/12/2006	405659	METAL	Zinc, Total (XRF)	mg/kg	201		
OSL-97C / SS02	9/12/2006	405659	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-97C / SS02	9/12/2006	405659	TCLPMET	Cadmium, TCLP	mg/L	0.009		
OSL-97C / SS02	9/12/2006	405659	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-97D / SS02	9/12/2006	405658	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-97D / SS02	9/12/2006	405658	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97D / SS02	9/12/2006	405658	METAL	Lead, Total (XRF)	mg/kg	76		
OSL-97D / SS02	9/12/2006	405658	METAL	Zinc, Total (XRF)	mg/kg	562		
OSL-97E / SS01	9/12/2006	405660	METAL	Arsenic, Total (XRF)	mg/kg	65.1		
OSL-97E / SS01	9/12/2006	405660	METAL	Cadmium, Total (XRF)	mg/kg	16.4		
OSL-97E / SS01	9/12/2006	405660	METAL	Lead, Total (XRF)	mg/kg	755		
OSL-97E / SS01	9/12/2006	405660	METAL	Zinc, Total (XRF)	mg/kg	5400		
OSL-97E / SS02	9/12/2006	405661	METAL	Arsenic, Total (XRF)	mg/kg	13.7		
OSL-97E / SS02	9/12/2006	405661	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97E / SS02	9/12/2006	405661	METAL	Lead, Total (XRF)	mg/kg	197		
OSL-97E / SS02	9/12/2006	405661	METAL	Zinc, Total (XRF)	mg/kg	902		

Table 2
Data Qualifiers
Soil and Sediment Samples
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Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-97F / SS02	9/12/2006	405662	METAL	Arsenic, Total (XRF)	mg/kg	27.6	U	
OSL-97F / SS02	9/12/2006	405662	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-97F / SS02	9/12/2006	405662	METAL	Lead, Total (XRF)	mg/kg	359		
OSL-97F / SS02	9/12/2006	405662	METAL	Zinc, Total (XRF)	mg/kg	748		
OSL-97F / SS02	9/12/2006	405663	METAL	Arsenic, Total (XRF)	mg/kg	49.7	U	
OSL-97F / SS02	9/12/2006	405663	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-97F / SS02	9/12/2006	405663	METAL	Lead, Total (XRF)	mg/kg	636		
OSL-97F / SS02	9/12/2006	405663	METAL	Zinc, Total (XRF)	mg/kg	861		
OSL-97G / SS01	9/12/2006	405664	METAL	Arsenic, Total (XRF)	mg/kg	14.2	U	
OSL-97G / SS01	9/12/2006	405664	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-97G / SS01	9/12/2006	405664	METAL	Lead, Total (XRF)	mg/kg	153		
OSL-97G / SS01	9/12/2006	405664	METAL	Zinc, Total (XRF)	mg/kg	535		
OSL-97G / SS02	9/12/2006	405665	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-97G / SS02	9/12/2006	405665	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-97G / SS02	9/12/2006	405665	METAL	Lead, Total (XRF)	mg/kg	57.3		
OSL-97G / SS02	9/12/2006	405665	METAL	Zinc, Total (XRF)	mg/kg	256		
OSL-100 / SS01	8/22/2006	405027	METAL	Arsenic, Total (ICP)	mg/kg	66	>E	
OSL-100 / SS01	8/22/2006	405027	METAL	Arsenic, Total (XRF)	mg/kg	227		
OSL-100 / SS01	8/22/2006	405027	METAL	Cadmium, Total (ICP)	mg/kg	147		
OSL-100 / SS01	8/22/2006	405027	METAL	Cadmium, Total (XRF)	mg/kg	193		
OSL-100 / SS01	8/22/2006	405027	METAL	Lead, Total (ICP)	mg/kg	2960		
OSL-100 / SS01	8/22/2006	405027	METAL	Lead, Total (XRF)	mg/kg	3960		
OSL-100 / SS01	8/22/2006	405027	METAL	Zinc, Total (ICP)	mg/kg	15000		
OSL-100 / SS01	8/22/2006	405027	METAL	Zinc, Total (XRF)	mg/kg	7000		
OSL-100 / SS02	8/22/2006	405028	METAL	Arsenic, Total (ICP)	mg/kg	121		
OSL-100 / SS02	8/22/2006	405028	METAL	Arsenic, Total (XRF)	mg/kg	284		
OSL-100 / SS02	8/22/2006	405028	METAL	Cadmium, Total (ICP)	mg/kg	134		
OSL-100 / SS02	8/22/2006	405028	METAL	Cadmium, Total (XRF)	mg/kg	166		
OSL-100 / SS02	8/22/2006	405028	METAL	Lead, Total (ICP)	mg/kg	3980		
OSL-100 / SS02	8/22/2006	405028	METAL	Lead, Total (XRF)	mg/kg	4710		
OSL-100 / SS02	8/22/2006	405028	METAL	Zinc, Total (ICP)	mg/kg	15800		
OSL-100 / SS02	8/22/2006	405028	METAL	Zinc, Total (XRF)	ma/kq	7000		

Table 2
Data Qualifiers
Soil and Sediment Samples
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Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-101 / SS01	8/22/2006	405029	METAL	Arsenic, Total (ICP)	mg/kg	395		
OSL-101 / SS01	8/22/2006	405029	METAL	Arsenic, Total (XRF)	mg/kg	650	>E	
OSL-101 / SS01	8/22/2006	405029	METAL	Cadmium, Total (ICP)	mg/kg	100		
OSL-101 / SS01	8/22/2006	405029	METAL	Cadmium, Total (XRF)	mg/kg	110		
OSL-101 / SS01	8/22/2006	405029	METAL	Lead, Total (ICP)	mg/kg	15900		
OSL-101 / SS01	8/22/2006	405029	METAL	Lead, Total (XRF)	mg/kg	5500	>E	
OSL-101 / SS01	8/22/2006	405029	METAL	Zinc, Total (ICP)	mg/kg	42500		
OSL-101 / SS01	8/22/2006	405029	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OSL-101 / SS02	8/22/2006	405030	METAL	Arsenic, Total (ICP)	mg/kg	114		
OSL-101 / SS02	8/22/2006	405030	METAL	Arsenic, Total (XRF)	mg/kg	285		
OSL-101 / SS02	8/22/2006	405030	METAL	Cadmium, Total (ICP)	mg/kg	32		
OSL-101 / SS02	8/22/2006	405030	METAL	Cadmium, Total (XRF)	mg/kg	42.9		
OSL-101 / SS02	8/22/2006	405030	METAL	Lead, Total (ICP)	mg/kg	3490		
OSL-101 / SS02	8/22/2006	405030	METAL	Lead, Total (XRF)	mg/kg	4720		
OSL-101 / SS02	8/22/2006	405030	METAL	Zinc, Total (ICP)	mg/kg	14700		
OSL-101 / SS02	8/22/2006	405030	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
OSL-102 / SS01	8/22/2006	405034	METAL	Arsenic, Total (XRF)	mg/kg	36.3		
OSL-102 / SS01	8/22/2006	405034	METAL	Cadmium, Total (XRF)	mg/kg	11.8		J*
OSL-102 / SS01	8/22/2006	405034	METAL	Lead, Total (XRF)	mg/kg	569		
OSL-102 / SS01	8/22/2006	405034	METAL	Zinc, Total (XRF)	mg/kg	815		
OSL-102 / SS02	8/22/2006	405035	METAL	Arsenic, Total (XRF)	mg/kg	21.9		
OSL-102 / SS02	8/22/2006	405035	METAL	Cadmium, Total (XRF)	mg/kg	10	U	J*
OSL-102 / SS02	8/22/2006	405035	METAL	Lead, Total (XRF)	mg/kg	333		
OSL-102 / SS02	8/22/2006	405035	METAL	Zinc, Total (XRF)	mg/kg	545		
OSL-103 / SS01	8/22/2006	405032	METAL	Arsenic, Total (XRF)	mg/kg	12.7		
OSL-103 / SS01	8/22/2006	405032	METAL	Cadmium, Total (XRF)	mg/kg	12.4		J*
OSL-103 / SS01	8/22/2006	405032	METAL	Lead, Total (XRF)	mg/kg	261		
OSL-103 / SS01	8/22/2006	405032	METAL	Zinc, Total (XRF)	mg/kg	973		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-103 / SS02	8/22/2006	405033	METAL	Arsenic, Total (ICP)	mg/kg	10	U	J-
OSL-103 / SS02	8/22/2006	405033	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-103 / SS02	8/22/2006	405033	METAL	Cadmium, Total (ICP)	mg/kg	12		
OSL-103 / SS02	8/22/2006	405033	METAL	Cadmium, Total (XRF)	mg/kg	10		
OSL-103 / SS02	8/22/2006	405033	METAL	Lead, Total (ICP)	mg/kg	112		
OSL-103 / SS02	8/22/2006	405033	METAL	Lead, Total (XRF)	mg/kg	107		
OSL-103 / SS02	8/22/2006	405033	METAL	Zinc, Total (ICP)	mg/kg	835		
OSL-103 / SS02	8/22/2006	405033	METAL	Zinc, Total (XRF)	mg/kg	786		
OSL-103 / SS02	8/22/2006	405033	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-103 / SS02	8/22/2006	405033	TCLPMET	Cadmium, TCLP	mg/L	0.088		
OSL-103 / SS02	8/22/2006	405033	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-1013 / SS02	8/22/2006	405031	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-1013 / SS02	8/22/2006	405031	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-1013 / SS02	8/22/2006	405031	METAL	Cadmium, Total (ICP)	mg/kg	3		
OSL-1013 / SS02	8/22/2006	405031	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1013 / SS02	8/22/2006	405031	METAL	Lead, Total (ICP)	mg/kg	62		
OSL-1013 / SS02	8/22/2006	405031	METAL	Lead, Total (XRF)	mg/kg	58.3		
OSL-1013 / SS02	8/22/2006	405031	METAL	Zinc, Total (ICP)	mg/kg	327		
OSL-1013 / SS02	8/22/2006	405031	METAL	Zinc, Total (XRF)	mg/kg	382		
OSL-1013 / SS02	8/22/2006	405031	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-1013 / SS02	8/22/2006	405031	TCLPMET	Cadmium, TCLP	mg/L	0.02		
OSL-1013 / SS02	8/22/2006	405031	TCLPMET	Lead, TCLP	mg/L	0.05	U	
OSL-104 / SS01	8/31/2006	405067	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-104 / SS01	8/31/2006	405067	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-104 / SS01	8/31/2006	405067	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-104 / SS01	8/31/2006	405067	METAL	Zinc, Total (XRF)	mg/kg	93.2		
OSL-105 / SS01	8/31/2006	405068	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-105 / SS01	8/31/2006	405068	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-105 / SS01	8/31/2006	405068	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-105 / SS01	8/31/2006	405068	METAL	Zinc, Total (XRF)	mg/kg	98.1		
OSL-106 / SS01	8/31/2006	405070	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-106 / SS01	8/31/2006	405070	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-106 / SS01	8/31/2006	405070	METAL	Lead, Total (XRF)	mg/kg	86.7		
OSL-106 / SS01	8/31/2006	405070	METAL	Zinc, Total (XRF)	mg/kg	435		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-107 / SS01	8/31/2006	405069	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-107 / SS01	8/31/2006	405069	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-107 / SS01	8/31/2006	405069	METAL	Lead, Total (XRF)	mg/kg	48.5		
OSL-107 / SS01	8/31/2006	405069	METAL	Zinc, Total (XRF)	mg/kg	253		
OSL-108 / SS01	8/31/2006	405071	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-108 / SS01	8/31/2006	405071	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-108 / SS01	8/31/2006	405071	METAL	Lead, Total (XRF)	mg/kg	58.7		
OSL-108 / SS01	8/31/2006	405071	METAL	Zinc, Total (XRF)	mg/kg	269		
OSL-109 / SS01	8/31/2006	405072	METAL	Arsenic, Total (XRF)	mg/kg	10.9		
OSL-109 / SS01	8/31/2006	405072	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-109 / SS01	8/31/2006	405072	METAL	Lead, Total (XRF)	mg/kg	78.2		
OSL-109 / SS01	8/31/2006	405072	METAL	Zinc, Total (XRF)	mg/kg	383		
OSL-1014 / SS01	8/31/2006	405073	METAL	Arsenic, Total (XRF)	mg/kg	10.4		
OSL-1014 / SS01	8/31/2006	405073	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-1014 / SS01	8/31/2006	405073	METAL	Lead, Total (XRF)	mg/kg	74.2		
OSL-1014 / SS01	8/31/2006	405073	METAL	Zinc, Total (XRF)	mg/kg	358		
OSL-111 / SS01	8/31/2006	405077	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-111 / SS01	8/31/2006	405077	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-111 / SS01	8/31/2006	405077	METAL	Lead, Total (XRF)	mg/kg	46.7		
OSL-111 / SS01	8/31/2006	405077	METAL	Zinc, Total (XRF)	mg/kg	209		
OSL-113 / SS01	8/31/2006	405078	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
OSL-113 / SS01	8/31/2006	405078	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-113 / SS01	8/31/2006	405078	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
OSL-113 / SS01	8/31/2006	405078	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-113 / SS01	8/31/2006	405078	METAL	Lead, Total (ICP)	mg/kg	13		
OSL-113 / SS01	8/31/2006	405078	METAL	Lead, Total (XRF)	mg/kg	20	U	
OSL-113 / SS01	8/31/2006	405078	METAL	Zinc, Total (ICP)	mg/kg	46		
OSL-113 / SS01	8/31/2006	405078	METAL	Zinc, Total (XRF)	mg/kg	69.8		
OSL-113 / SS01	8/31/2006	405078	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
OSL-113 / SS01	8/31/2006	405078	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
OSL-113 / SS01	8/31/2006	405078	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
OSL-114 / SS01	9/12/2006	405674	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
OSL-114 / SS01	9/12/2006	405674	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
OSL-114 / SS01	9/12/2006	405674	METAL	Lead, Total (XRF)	mg/kg	37.1		
OSL-114 / SS01	9/12/2006	405674	METAL	Zinc, Total (XRF)	mg/kg	288		
OSL-116 / SS01	9/6/2006	405126	METAL	Arsenic, Total (XRF)	mg/kg	228		
OSL-116 / SS01	9/6/2006	405126	METAL	Cadmium, Total (XRF)	mg/kg	10.7		
OSL-116 / SS01	9/6/2006	405126	METAL	Lead, Total (XRF)	mg/kg	2580		
OSL-116 / SS01	9/6/2006	405126	METAL	Zinc, Total (XRF)	mg/kg	6460		
TRB-08A / SS02	9/12/2006	405666	METAL	Arsenic, Total (XRF)	mg/kg	269		
TRB-08A / SS02	9/12/2006	405666	METAL	Cadmium, Total (XRF)	mg/kg	18.4		
TRB-08A / SS02	9/12/2006	405666	METAL	Lead, Total (XRF)	mg/kg	2850		
TRB-08A / SS02	9/12/2006	405666	METAL	Zinc, Total (XRF)	mg/kg	5160		
TRB-08B / SS01	9/12/2006	405667	METAL	Arsenic, Total (ICP)	mg/kg	11		
TRB-08B / SS01	9/12/2006	405667	METAL	Arsenic, Total (XRF)	mg/kg	12.6		
TRB-08B / SS01	9/12/2006	405667	METAL	Cadmium, Total (ICP)	mg/kg	2		
TRB-08B / SS01	9/12/2006	405667	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-08B / SS01	9/12/2006	405667	METAL	Lead, Total (ICP)	mg/kg	118		
TRB-08B / SS01	9/12/2006	405667	METAL	Lead, Total (XRF)	mg/kg	159		
TRB-08B / SS01	9/12/2006	405667	METAL	Zinc, Total (ICP)	mg/kg	440		
TRB-08B / SS01	9/12/2006	405667	METAL	Zinc, Total (XRF)	mg/kg	652		
TRB-08B / SS01	9/12/2006	405667	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TRB-08B / SS01	9/12/2006	405667	TCLPMET	Cadmium, TCLP	mg/L	0.015		
TRB-08B / SS01	9/12/2006	405667	TCLPMET	Lead, TCLP	mg/L	0.05	U	
TRB-1001 / SS01	9/12/2006	405668	METAL	Arsenic, Total (ICP)	mg/kg	12		
TRB-1001 / SS01	9/12/2006	405668	METAL	Arsenic, Total (XRF)	mg/kg	14.9		
TRB-1001 / SS01	9/12/2006	405668	METAL	Cadmium, Total (ICP)	mg/kg	3		
TRB-1001 / SS01	9/12/2006	405668	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-1001 / SS01	9/12/2006	405668	METAL	Lead, Total (ICP)	mg/kg	138		
TRB-1001 / SS01	9/12/2006	405668	METAL	Lead, Total (XRF)	mg/kg	182		
TRB-1001 / SS01	9/12/2006	405668	METAL	Zinc, Total (ICP)	mg/kg	538		
TRB-1001 / SS01	9/12/2006	405668	METAL	Zinc, Total (XRF)	mg/kg	760		
TRB-1001 / SS01	9/12/2006	405668	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TRB-1001 / SS01	9/12/2006	405668	TCLPMET	Cadmium, TCLP	mg/L	0.008		
TRB-1001 / SS01	9/12/2006	405668	TCLPMET	Lead, TCLP	mg/L	0.05	U	

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TRB-08B / SS02	9/12/2006	405669	METAL	Arsenic, Total (XRF)	mg/kg	21	U	
TRB-08B / SS02	9/12/2006	405669	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-08B / SS02	9/12/2006	405669	METAL	Lead, Total (XRF)	mg/kg	214		
TRB-08B / SS02	9/12/2006	405669	METAL	Zinc, Total (XRF)	mg/kg	786		
TRB-08C / SS01	9/12/2006	405670	METAL	Arsenic, Total (XRF)	mg/kg	49.9	U	
TRB-08C / SS01	9/12/2006	405670	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-08C / SS01	9/12/2006	405670	METAL	Lead, Total (XRF)	mg/kg	607		
TRB-08C / SS01	9/12/2006	405670	METAL	Zinc, Total (XRF)	mg/kg	1960		
TRB-08C / SS02	9/12/2006	405671	METAL	Arsenic, Total (XRF)	mg/kg	72.3		
TRB-08C / SS02	9/12/2006	405671	METAL	Cadmium, Total (XRF)	mg/kg	11.5		
TRB-08C / SS02	9/12/2006	405671	METAL	Lead, Total (XRF)	mg/kg	797		
TRB-08C / SS02	9/12/2006	405671	METAL	Zinc, Total (XRF)	mg/kg	2440		
TRB-08E / SS01	9/12/2006	405672	METAL	Arsenic, Total (XRF)	mg/kg	14.2	U	
TRB-08E / SS01	9/12/2006	405672	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-08E / SS01	9/12/2006	405672	METAL	Lead, Total (XRF)	mg/kg	201		
TRB-08E / SS01	9/12/2006	405672	METAL	Zinc, Total (XRF)	mg/kg	947		
TRB-08E / SS02	9/12/2006	405673	METAL	Arsenic, Total (XRF)	mg/kg	14.4	U	
TRB-08E / SS02	9/12/2006	405673	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-08E / SS02	9/12/2006	405673	METAL	Lead, Total (XRF)	mg/kg	134		
TRB-08E / SS02	9/12/2006	405673	METAL	Zinc, Total (XRF)	mg/kg	666		
TRB-09A / SS02	9/11/2006	405652	METAL	Arsenic, Total (XRF)	mg/kg	49.4	U	
TRB-09A / SS02	9/11/2006	405652	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09A / SS02	9/11/2006	405652	METAL	Lead, Total (XRF)	mg/kg	458		
TRB-09A / SS02	9/11/2006	405652	METAL	Zinc, Total (XRF)	mg/kg	1950		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TRB-09B / SS01	9/11/2006	405653	METAL	Arsenic, Total (ICP)	mg/kg	24	U	
TRB-09B / SS01	9/11/2006	405653	METAL	Arsenic, Total (XRF)	mg/kg	41.9		
TRB-09B / SS01	9/11/2006	405653	METAL	Cadmium, Total (ICP)	mg/kg	4		
TRB-09B / SS01	9/11/2006	405653	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09B / SS01	9/11/2006	405653	METAL	Lead, Total (ICP)	mg/kg	296		
TRB-09B / SS01	9/11/2006	405653	METAL	Lead, Total (XRF)	mg/kg	419		
TRB-09B / SS01	9/11/2006	405653	METAL	Zinc, Total (ICP)	mg/kg	1090	U	
TRB-09B / SS01	9/11/2006	405653	METAL	Zinc, Total (XRF)	mg/kg	1690		
TRB-09B / SS01	9/11/2006	405653	TCLPMET	Arsenic, TCLP	mg/L	0.05		
TRB-09B / SS01	9/11/2006	405653	TCLPMET	Cadmium, TCLP	mg/L	0.02		
TRB-09B / SS01	9/11/2006	405653	TCLPMET	Lead, TCLP	mg/L	0.063		
TRB-09B / SS02	9/11/2006	405654	METAL	Arsenic, Total (XRF)	mg/kg	41.4	U	
TRB-09B / SS02	9/11/2006	405654	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09B / SS02	9/11/2006	405654	METAL	Lead, Total (XRF)	mg/kg	400		
TRB-09B / SS02	9/11/2006	405654	METAL	Zinc, Total (XRF)	mg/kg	1580		
TRB-09E / SS01	9/11/2006	405655	METAL	Arsenic, Total (XRF)	mg/kg	23.1	U	
TRB-09E / SS01	9/11/2006	405655	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09E / SS01	9/11/2006	405655	METAL	Lead, Total (XRF)	mg/kg	237		
TRB-09E / SS01	9/11/2006	405655	METAL	Zinc, Total (XRF)	mg/kg	1050		
TRB-1002 / SS01	9/11/2006	405657	METAL	Arsenic, Total (XRF)	mg/kg	21	U	
TRB-1002 / SS01	9/11/2006	405657	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-1002 / SS01	9/11/2006	405657	METAL	Lead, Total (XRF)	mg/kg	243		
TRB-1002 / SS01	9/11/2006	405657	METAL	Zinc, Total (XRF)	mg/kg	1090		
TRB-09E / SS02	9/11/2006	405656	METAL	Arsenic, Total (XRF)	mg/kg	48.2	U	
TRB-09E / SS02	9/11/2006	405656	METAL	Cadmium, Total (XRF)	mg/kg	10		
TRB-09E / SS02	9/11/2006	405656	METAL	Lead, Total (XRF)	mg/kg	472		
TRB-09E / SS02	9/11/2006	405656	METAL	Zinc, Total (XRF)	mg/kg	1890		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TRB-10A / SS02	9/7/2006	405110	METAL	Arsenic, Total (ICP)	mg/kg	10		
TRB-10A / SS02	9/7/2006	405110	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TRB-10A / SS02	9/7/2006	405110	METAL	Cadmium, Total (ICP)	mg/kg	1		
TRB-10A / SS02	9/7/2006	405110	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10A / SS02	9/7/2006	405110	METAL	Lead, Total (ICP)	mg/kg	31		
TRB-10A / SS02	9/7/2006	405110	METAL	Lead, Total (XRF)	mg/kg	34.3		
TRB-10A / SS02	9/7/2006	405110	METAL	Zinc, Total (ICP)	mg/kg	395		
TRB-10A / SS02	9/7/2006	405110	METAL	Zinc, Total (XRF)	mg/kg	534		
TRB-10A / SS02	9/7/2006	405110	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TRB-10A / SS02	9/7/2006	405110	TCLPMET	Cadmium, TCLP	mg/L	0.015		
TRB-10A / SS02	9/7/2006	405110	TCLPMET	Lead, TCLP	mg/L	0.05	U	
TRB-10B / SS01	9/7/2006	405108	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TRB-10B / SS01	9/7/2006	405108	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10B / SS01	9/7/2006	405108	METAL	Lead, Total (XRF)	mg/kg	88.1		
TRB-10B / SS01	9/7/2006	405108	METAL	Zinc, Total (XRF)	mg/kg	615		
TRB-10B / SS02	9/7/2006	405109	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TRB-10B / SS02	9/7/2006	405109	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10B / SS02	9/7/2006	405109	METAL	Lead, Total (XRF)	mg/kg	47.5		
TRB-10B / SS02	9/7/2006	405109	METAL	Zinc, Total (XRF)	mg/kg	316		
TRB-10C / SS01	9/7/2006	405106	METAL	Arsenic, Total (XRF)	mg/kg	16.1		
TRB-10C / SS01	9/7/2006	405106	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10C / SS01	9/7/2006	405106	METAL	Lead, Total (XRF)	mg/kg	108		
TRB-10C / SS01	9/7/2006	405106	METAL	Zinc, Total (XRF)	mg/kg	613		
TRB-10C / SS02	9/7/2006	405107	METAL	Arsenic, Total (XRF)	mg/kg	15.7		
TRB-10C / SS02	9/7/2006	405107	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10C / SS02	9/7/2006	405107	METAL	Lead, Total (XRF)	mg/kg	114		
TRB-10C / SS02	9/7/2006	405107	METAL	Zinc, Total (XRF)	mg/kg	197		
TRB-10D / SS01	9/7/2006	405104	METAL	Arsenic, Total (XRF)	mg/kg	32.9		
TRB-10D / SS01	9/7/2006	405104	METAL	Cadmium, Total (XRF)	mg/kg	11.4		
TRB-10D / SS01	9/7/2006	405104	METAL	Lead, Total (XRF)	mg/kg	388		
TRB-10D / SS01	9/7/2006	405104	METAL	Zinc, Total (XRF)	mg/kg	1570		

Table 2
Data Qualifiers
Soil and Sediment Samples
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Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TRB-10D / SS02	9/7/2006	405105	METAL	Arsenic, Total (XRF)	mg/kg	43.4		
TRB-10D / SS02	9/7/2006	405105	METAL	Cadmium, Total (XRF)	mg/kg	16.2		
TRB-10D / SS02	9/7/2006	405105	METAL	Lead, Total (XRF)	mg/kg	480		
TRB-10D / SS02	9/7/2006	405105	METAL	Zinc, Total (XRF)	mg/kg	2630		
TRB-10E / SS01	9/7/2006	405101	METAL	Arsenic, Total (XRF)	mg/kg	31.9		
TRB-10E / SS01	9/7/2006	405101	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10E / SS01	9/7/2006	405101	METAL	Lead, Total (XRF)	mg/kg	331		
TRB-10E / SS01	9/7/2006	405101	METAL	Zinc, Total (XRF)	mg/kg	1090		
TRB-10E / SS02	9/7/2006	405102	METAL	Arsenic, Total (XRF)	mg/kg	20.8		
TRB-10E / SS02	9/7/2006	405102	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-10E / SS02	9/7/2006	405102	METAL	Lead, Total (XRF)	mg/kg	979		
TRB-10E / SS02	9/7/2006	405102	METAL	Zinc, Total (XRF)	mg/kg	182		
TRB-1003 / SS02	9/7/2006	405103	METAL	Arsenic, Total (XRF)	mg/kg	11		
TRB-1003 / SS02	9/7/2006	405103	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TRB-1003 / SS02	9/7/2006	405103	METAL	Lead, Total (XRF)	mg/kg	107		
TRB-1003 / SS02	9/7/2006	405103	METAL	Zinc, Total (XRF)	mg/kg	698		
TSL-05A / SS02	9/8/2006	405111	METAL	Arsenic, Total (ICP)	mg/kg	11		
TSL-05A / SS02	9/8/2006	405111	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-05A / SS02	9/8/2006	405111	METAL	Cadmium, Total (ICP)	mg/kg	1	U	
TSL-05A / SS02	9/8/2006	405111	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05A / SS02	9/8/2006	405111	METAL	Lead, Total (ICP)	mg/kg	44		
TSL-05A / SS02	9/8/2006	405111	METAL	Lead, Total (XRF)	mg/kg	40.6		
TSL-05A / SS02	9/8/2006	405111	METAL	Zinc, Total (ICP)	mg/kg	183		
TSL-05A / SS02	9/8/2006	405111	METAL	Zinc, Total (XRF)	mg/kg	227		
TSL-05A / SS02	9/8/2006	405111	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
TSL-05A / SS02	9/8/2006	405111	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
TSL-05A / SS02	9/8/2006	405111	TCLPMET	Lead, TCLP	mg/L	0.05	U	
TSL-05B / SS01	9/8/2006	405112	METAL	Arsenic, Total (XRF)	mg/kg	28.1		
TSL-05B / SS01	9/8/2006	405112	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05B / SS01	9/8/2006	405112	METAL	Lead, Total (XRF)	mg/kg	346		
TSL-05B / SS01	9/8/2006	405112	METAL	Zinc, Total (XRF)	mg/kg	1310		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TSL-05B / SS02	9/8/2006	405113	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-05B / SS02	9/8/2006	405113	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05B / SS02	9/8/2006	405113	METAL	Lead, Total (XRF)	mg/kg	105		
TSL-05B / SS02	9/8/2006	405113	METAL	Zinc, Total (XRF)	mg/kg	747		
TSL-05C / SS01	9/8/2006	405114	METAL	Arsenic, Total (XRF)	mg/kg	10.5		
TSL-05C / SS01	9/8/2006	405114	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05C / SS01	9/8/2006	405114	METAL	Lead, Total (XRF)	mg/kg	119		
TSL-05C / SS01	9/8/2006	405114	METAL	Zinc, Total (XRF)	mg/kg	422		
TSL-05C / SS02	9/8/2006	405115	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-05C / SS02	9/8/2006	405115	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05C / SS02	9/8/2006	405115	METAL	Lead, Total (XRF)	mg/kg	20	U	
TSL-05C / SS02	9/8/2006	405115	METAL	Zinc, Total (XRF)	mg/kg	296		
TSL-05D / SS01	9/8/2006	405116	METAL	Arsenic, Total (XRF)	mg/kg	56.8		
TSL-05D / SS01	9/8/2006	405116	METAL	Cadmium, Total (XRF)	mg/kg	23.7		
TSL-05D / SS01	9/8/2006	405116	METAL	Lead, Total (XRF)	mg/kg	691		
TSL-05D / SS01	9/8/2006	405116	METAL	Zinc, Total (XRF)	mg/kg	2210		
TSL-05D / SS02	9/8/2006	405117	METAL	Arsenic, Total (XRF)	mg/kg	17.9		
TSL-05D / SS02	9/8/2006	405117	METAL	Cadmium, Total (XRF)	mg/kg	12.5		
TSL-05D / SS02	9/8/2006	405117	METAL	Lead, Total (XRF)	mg/kg	238		
TSL-05D / SS02	9/8/2006	405117	METAL	Zinc, Total (XRF)	mg/kg	1340		
TSL-1001 / SS02	9/8/2006	405118	METAL	Arsenic, Total (XRF)	mg/kg	16.4		
TSL-1001 / SS02	9/8/2006	405118	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-1001 / SS02	9/8/2006	405118	METAL	Lead, Total (XRF)	mg/kg	208		
TSL-1001 / SS02	9/8/2006	405118	METAL	Zinc, Total (XRF)	mg/kg	947		
TSL-05E / SS01	9/8/2006	405119	METAL	Arsenic, Total (XRF)	mg/kg	21.4		
TSL-05E / SS01	9/8/2006	405119	METAL	Cadmium, Total (XRF)	mg/kg	11.6		
TSL-05E / SS01	9/8/2006	405119	METAL	Lead, Total (XRF)	mg/kg	247		
TSL-05E / SS01	9/8/2006	405119	METAL	Zinc, Total (XRF)	mg/kg	1020		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Offsite Soil Samples (continued)								
TSL-05E / SS02	9/8/2006	405120	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-05E / SS02	9/8/2006	405120	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-05E / SS02	9/8/2006	405120	METAL	Lead, Total (XRF)	mg/kg	12.7		
TSL-05E / SS02	9/8/2006	405120	METAL	Zinc, Total (XRF)	mg/kg	307		
TSL-09 / SS01	8/30/2006	405064	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-09 / SS01	8/30/2006	405064	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-09 / SS01	8/30/2006	405064	METAL	Lead, Total (XRF)	mg/kg	54		
TSL-09 / SS01	8/30/2006	405064	METAL	Zinc, Total (XRF)	mg/kg	260		
TSL-09 / SS02	8/30/2006	405065	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
TSL-09 / SS02	8/30/2006	405065	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
TSL-09 / SS02	8/30/2006	405065	METAL	Lead, Total (XRF)	mg/kg	26.9		
TSL-09 / SS02	8/30/2006	405065	METAL	Zinc, Total (XRF)	mg/kg	173		
Sediment Samples								
FP-01 / SD01	9/20/2006	405888	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
FP-01 / SD01	9/20/2006	405888	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
FP-01 / SD01	9/20/2006	405888	METAL	Lead, Total (XRF)	mg/kg	64.5		
FP-01 / SD01	9/20/2006	405888	METAL	Zinc, Total (XRF)	mg/kg	393		
FP-02 / SD01	9/20/2006	405889	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
FP-02 / SD01	9/20/2006	405889	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
FP-02 / SD01	9/20/2006	405889	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
FP-02 / SD01	9/20/2006	405889	TCLPMET	Cadmium, TCLP	mg/L	0.005	U	
FP-02 / SD01	9/20/2006	405889	METAL	Cadmium, Total (ICP)	mg/kg	2		
FP-02 / SD01	9/20/2006	405889	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
FP-02 / SD01	9/20/2006	405889	TCLPMET	Lead, TCLP	mg/L	0.066		
FP-02 / SD01	9/20/2006	405889	METAL	Lead, Total (ICP)	mg/kg	87		
FP-02 / SD01	9/20/2006	405889	METAL	Lead, Total (XRF)	mg/kg	89.4		
FP-02 / SD01	9/20/2006	405889	METAL	Zinc, Total (ICP)	mg/kg	423		J-
FP-02 / SD01	9/20/2006	405889	METAL	Zinc, Total (XRF)	mg/kg	525		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Sediment Samples (continued)								
FP-1000 / SD01	9/20/2006	405890	TCLPMET	Arsenic, TCLP	mg/L	0.061		
FP-1000 / SD01	9/20/2006	405890	METAL	Arsenic, Total (ICP)	mg/kg	10	U	
FP-1000 / SD01	9/20/2006	405890	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
FP-1000 / SD01	9/20/2006	405890	TCLPMET	Cadmium, TCLP	mg/L	0.007		
FP-1000 / SD01	9/20/2006	405890	METAL	Cadmium, Total (ICP)	mg/kg	2		
FP-1000 / SD01	9/20/2006	405890	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
FP-1000 / SD01	9/20/2006	405890	TCLPMET	Lead, TCLP	mg/L	0.172		
FP-1000 / SD01	9/20/2006	405890	METAL	Lead, Total (ICP)	mg/kg	80		
FP-1000 / SD01	9/20/2006	405890	METAL	Lead, Total (XRF)	mg/kg	80.9		
FP-1000 / SD01	9/20/2006	405890	METAL	Zinc, Total (ICP)	mg/kg	411		
FP-1000 / SD01	9/20/2006	405890	METAL	Zinc, Total (XRF)	mg/kg	481		
FP-03 / SD01	9/20/2006	405891	METAL	Arsenic, Total (XRF)	mg/kg	10		
FP-03 / SD01	9/20/2006	405891	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
FP-03 / SD01	9/20/2006	405891	METAL	Lead, Total (XRF)	mg/kg	142		
FP-03 / SD01	9/20/2006	405891	METAL	Zinc, Total (XRF)	mg/kg	608		
Onsite Soil Samples								
SP-54 / SS01	8/18/2006	404994	METAL	Arsenic, Total (XRF)	mg/kg	108		
SP-54 / SS01	8/18/2006	404994	METAL	Cadmium, Total (XRF)	mg/kg	29.4		
SP-54 / SS01	8/18/2006	404994	METAL	Lead, Total (XRF)	mg/kg	2020		
SP-54 / SS01	8/18/2006	404994	METAL	Zinc, Total (XRF)	mg/kg	1990		
SP-54 / SS02	8/18/2006	404995	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-54 / SS02	8/18/2006	404995	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-54 / SS02	8/18/2006	404995	METAL	Lead, Total (XRF)	mg/kg	23.8		
SP-54 / SS02	8/18/2006	404995	METAL	Zinc, Total (XRF)	mg/kg	440		
SP-55 / SS01	8/18/2006	404996	TCLPMET	Arsenic, TCLP	mg/L	0.05		
SP-55 / SS01	8/18/2006	404996	METAL	Arsenic, Total (ICP)	mg/kg	96		
SP-55 / SS01	8/18/2006	404996	METAL	Arsenic, Total (XRF)	mg/kg	230		
SP-55 / SS01	8/18/2006	404996	TCLPMET	Cadmium, TCLP	mg/L	0.559		
SP-55 / SS01	8/18/2006	404996	METAL	Cadmium, Total (ICP)	mg/kg	61		
SP-55 / SS01	8/18/2006	404996	METAL	Cadmium, Total (XRF)	mg/kg	81.3		
SP-55 / SS01	8/18/2006	404996	TCLPMET	Lead, TCLP	mg/L	3.39		
SP-55 / SS01	8/18/2006	404996	METAL	Lead, Total (ICP)	mg/kg	3240		
SP-55 / SS01	8/18/2006	404996	METAL	Lead, Total (XRF)	mg/kg	3610		
SP-55 / SS01	8/18/2006	404996	METAL	Zinc, Total (ICP)	mg/kg	12100		
SP-55 / SS01	8/18/2006	404996	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
SP-1015 / SS01	8/18/2006	404997	TCLPMET	Arsenic, TCLP	mg/L	0.054		
SP-1015 / SS01	8/18/2006	404997	METAL	Arsenic, Total (ICP)	mg/kg	97		
SP-1015 / SS01	8/18/2006	404997	METAL	Arsenic, Total (XRF)	mg/kg	234		
SP-1015 / SS01	8/18/2006	404997	TCLPMET	Cadmium, TCLP	mg/L	0.577		
SP-1015 / SS01	8/18/2006	404997	METAL	Cadmium, Total (ICP)	mg/kg	58		
SP-1015 / SS01	8/18/2006	404997	METAL	Cadmium, Total (XRF)	mg/kg	71.2		
SP-1015 / SS01	8/18/2006	404997	TCLPMET	Lead, TCLP	mg/L	3.32		
SP-1015 / SS01	8/18/2006	404997	METAL	Lead, Total (ICP)	mg/kg	3200		
SP-1015 / SS01	8/18/2006	404997	METAL	Lead, Total (XRF)	mg/kg	3630		
SP-1015 / SS01	8/18/2006	404997	METAL	Zinc, Total (ICP)	mg/kg	12200		
SP-1015 / SS01	8/18/2006	404997	METAL	Zinc, Total (XRF)	mg/kg	7000	>E	
SP-55 / SS02	8/18/2006	404998	METAL	Arsenic, Total (XRF)	mg/kg	94.8		
SP-55 / SS02	8/18/2006	404998	METAL	Cadmium, Total (XRF)	mg/kg	39.9		
SP-55 / SS02	8/18/2006	404998	METAL	Lead, Total (XRF)	mg/kg	1630		
SP-55 / SS02	8/18/2006	404998	METAL	Zinc, Total (XRF)	mg/kg	4860		
SP-56 / SS01	8/18/2006	404999	METAL	Arsenic, Total (XRF)	mg/kg	35.3		
SP-56 / SS01	8/18/2006	404999	METAL	Cadmium, Total (XRF)	mg/kg	34.6		
SP-56 / SS01	8/18/2006	404999	METAL	Lead, Total (XRF)	mg/kg	735		
SP-56 / SS01	8/18/2006	404999	METAL	Zinc, Total (XRF)	mg/kg	3130		
SP-56 / SS02	8/18/2006	405000	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-56 / SS02	8/18/2006	405000	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-56 / SS02	8/18/2006	405000	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-56 / SS02	8/18/2006	405000	METAL	Zinc, Total (XRF)	mg/kg	751		
SP-56 / SS03	8/18/2006	405001	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-56 / SS03	8/18/2006	405001	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-56 / SS03	8/18/2006	405001	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-56 / SS03	8/18/2006	405001	METAL	Zinc, Total (XRF)	mg/kg	50	U	
SP-57 / SS01	8/18/2006	405002	METAL	Arsenic, Total (XRF)	mg/kg	23.8		
SP-57 / SS01	8/18/2006	405002	METAL	Cadmium, Total (XRF)	mg/kg	11.1		
SP-57 / SS01	8/18/2006	405002	METAL	Lead, Total (XRF)	mg/kg	399		
SP-57 / SS01	8/18/2006	405002	METAL	Zinc, Total (XRF)	mg/kg	1150		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
SP-57 / SS02	8/18/2006	405003	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-57 / SS02	8/18/2006	405003	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-57 / SS02	8/18/2006	405003	METAL	Lead, Total (XRF)	mg/kg	174		
SP-57 / SS02	8/18/2006	405003	METAL	Zinc, Total (XRF)	mg/kg	833		
SP-58 / SS01	8/18/2006	405004	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-58 / SS01	8/18/2006	405004	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-58 / SS01	8/18/2006	405004	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-58 / SS01	8/18/2006	405004	METAL	Zinc, Total (XRF)	mg/kg	753		
SP-58 / SS02	8/18/2006	405005	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-58 / SS02	8/18/2006	405005	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-58 / SS02	8/18/2006	405005	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-58 / SS02	8/18/2006	405005	METAL	Zinc, Total (XRF)	mg/kg	80.5		
SP-59 / SS01	8/18/2006	405006	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-59 / SS01	8/18/2006	405006	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-59 / SS01	8/18/2006	405006	METAL	Lead, Total (XRF)	mg/kg	84.9		
SP-59 / SS01	8/18/2006	405006	METAL	Zinc, Total (XRF)	mg/kg	853		
SP-59 / SS02	8/18/2006	405007	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-59 / SS02	8/18/2006	405007	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-59 / SS02	8/18/2006	405007	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-59 / SS02	8/18/2006	405007	METAL	Zinc, Total (XRF)	mg/kg	84.1		
SP-59 / SS03	8/18/2006	405008	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-59 / SS03	8/18/2006	405008	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-59 / SS03	8/18/2006	405008	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-59 / SS03	8/18/2006	405008	METAL	Zinc, Total (XRF)	mg/kg	67.4		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Onsite Soil Samples (continued)								
SP-60 / SS01	8/18/2006	405009	METAL	Arsenic, Total (ICP)	mg/kg	11		
SP-60 / SS01	8/18/2006	405009	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-60 / SS01	8/18/2006	405009	METAL	Cadmium, Total (ICP)	mg/kg	5		
SP-60 / SS01	8/18/2006	405009	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-60 / SS01	8/18/2006	405009	METAL	Lead, Total (ICP)	mg/kg	102		
SP-60 / SS01	8/18/2006	405009	METAL	Lead, Total (XRF)	mg/kg	115		
SP-60 / SS01	8/18/2006	405009	METAL	Zinc, Total (ICP)	mg/kg	717		
SP-60 / SS01	8/18/2006	405009	METAL	Zinc, Total (XRF)	mg/kg	997		
SP-60 / SS01	8/18/2006	405009	TCLPMET	Arsenic, TCLP	mg/L	0.05	U	
SP-60 / SS01	8/18/2006	405009	TCLPMET	Cadmium, TCLP	mg/L	0.025		
SP-60 / SS01	8/18/2006	405009	TCLPMET	Lead, TCLP	mg/L	0.05	U	
SP-60 / SS02	8/18/2006	405010	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-60 / SS02	8/18/2006	405010	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-60 / SS02	8/18/2006	405010	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-60 / SS02	8/18/2006	405010	METAL	Zinc, Total (XRF)	mg/kg	126		
SP-1016 / SS02	8/18/2006	405011	METAL	Arsenic, Total (XRF)	mg/kg	10	U	
SP-1016 / SS02	8/18/2006	405011	METAL	Cadmium, Total (XRF)	mg/kg	10	U	
SP-1016 / SS02	8/18/2006	405011	METAL	Lead, Total (XRF)	mg/kg	20	U	
SP-1016 / SS02	8/18/2006	405011	METAL	Zinc, Total (XRF)	mg/kg	112		

>E = Result exceeds calibration range of instrument
ICP = Inductively Coupled Plasma
ID = Identification
J* = Qualified as estimated during QC evaluation
J- = Qualified as estimated during QC evaluation (Biased low)

mg/kg = milligrams per kilogram
mg/L = milligrams per Liter
TCLP = Toxicity Characteristic Leaching Procedure
U = Compound was not detected
XRF = X-Ray Fluorescence Spectroscopy

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		BG-OSL-07/SS01 08/31/2006	BG-OSL-1000/SS01 08/31/2006	BG-SP-05/SS02 09/01/2006	BG-SP-1000/SS02 09/01/2006	FP-02/SD01 09/20/2006	FP-1000/SD01 09/20/2006
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	10 U	10 U
Cadmium, ICP	mg/kg	--	--	--	--	2	2
Lead, ICP	mg/kg	--	--	--	--	87	80
Zinc, ICP	mg/kg	--	--	--	--	423 J-	411
Arsenic, XRF	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U
Cadmium, XRF	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U
Lead, XRF	mg/kg	22.4	20.1	20 U	20 U	89.4	80.9
Zinc, XRF	mg/kg	120	110	58.1	55.8	525	481
Arsenic, TCLP	mg/L	--	--	--	--	0.05 U	0.061
Cadmium, TCLP	mg/L	--	--	--	--	0.005 U	0.007
Lead, TCLP	mg/L	--	--	--	--	0.066	0.172

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OSL-12E/SS01 09/07/2006	OSL-1006/SS01 09/07/2006	OSL-36E/SS01 09/12/2006	OSL-1008/SS01 09/12/2006	OSL-39C/SS01 09/05/2006	OSL-1007/SS01 09/05/2006
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	13.6	13.2	53.2	56	23.3	21.5
Cadmium, XRF	mg/kg	10 U	10 U	20.8	19.9	13.9	10 U
Lead, XRF	mg/kg	122	102	734	670	257	255
Zinc, XRF	mg/kg	557	430	2410	56	1230	1160
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OSL-40B/SS02 08/24/2006	OSL-1009/SS02 08/24/2006	OSL-49A/SS02 08/24/2006	OSL-1010/SS02 08/24/2006	OSL-96C/SS01 08/28/2006	OSL-1011/SS01 08/28/2006
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	10 U	10 U	10 U	10 U	10 U	13.1
Cadmium, XRF	mg/kg	10 U J*	10 U	10 U	10 U	10 U	10 U
Lead, XRF	mg/kg	29.6	87.1	92.8	130	140	145
Zinc, XRF	mg/kg	193	295	506	577	556	548
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		OSL-97F/SS02 09/12/2006	OSL-1012/SS02 09/12/2006	OSL-103/SS02 08/22/2006	OSL-1013/SS02 08/22/2006	OSL-109/SS01 08/31/2006	OSL-1014/SS01 08/31/2006
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	10 U	10 U	--	--
Cadmium, ICP	mg/kg	--	--	12	3	--	--
Lead, ICP	mg/kg	--	--	112	62	--	--
Zinc, ICP	mg/kg	--	--	835 J-	327	--	--
Arsenic, XRF	mg/kg	27.6	49.7	10 U	10 U	10.9	10.4
Cadmium, XRF	mg/kg	10 U	10 U	10 J*	10 U	10 U	10 U
Lead, XRF	mg/kg	359	636	107	58.3	78.2	74.2
Zinc, XRF	mg/kg	748	861	786	382	383	358
Arsenic, TCLP	mg/L	--	--	0.05 U	0.05 U	--	--
Cadmium, TCLP	mg/L	--	--	0.088	0.02	--	--
Lead, TCLP	mg/L	--	--	0.05 U	0.05 U	--	--

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		SP-55/SS01 08/18/2006	SP-1015/SS01 08/18/2006	SP-60/SS02 08/18/2006	SP-1016/SS02 08/18/2006	TRB-08B/SS01 09/12/2006	TRB-1001/SS01 09/12/2006
Parameter	Units						
Arsenic, ICP	mg/kg	96	97	--	--	11	12
Cadmium, ICP	mg/kg	61	58	--	--	2	3
Lead, ICP	mg/kg	3240	3200	--	--	118	138
Zinc, ICP	mg/kg	12100	12200	--	--	440	538
Arsenic, XRF	mg/kg	230	234	10 U	10 U	12.6	14.9
Cadmium, XRF	mg/kg	81.3	71.2	10 U	10 U	10 U	10 U
Lead, XRF	mg/kg	3610	3630	20 U	20 U	159	182
Zinc, XRF	mg/kg	>7000 E	>7000 E	126	112	652	760
Arsenic, TCLP	mg/L	0.05 U	0.054	--	--	0.05 U	0.05 U
Cadmium, TCLP	mg/L	0.559	0.577	--	--	0.015	0.008
Lead, TCLP	mg/L	3.39	3.32	--	--	0.05 U	0.05 U

Table 3
Field Duplicate Results
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		TRB-09E/SS01 09/11/2006	TRB-1002/SS01 09/11/2006	TRB-10E/SS02 09/07/2006	TRB-1003/SS02 09/07/2006	TSL-05D/SS02 09/08/2006	TSL-1001/SS02 09/08/2006
Parameter	Units						
Arsenic, ICP	mg/kg	--	--	--	--	--	--
Cadmium, ICP	mg/kg	--	--	--	--	--	--
Lead, ICP	mg/kg	--	--	--	--	--	--
Zinc, ICP	mg/kg	--	--	--	--	--	--
Arsenic, XRF	mg/kg	23.1	21	20.8	11	17.9	16.4
Cadmium, XRF	mg/kg	10 U	10 U	10 U	10 U	12.5	10 U
Lead, XRF	mg/kg	237	243	979	107	238	208
Zinc, XRF	mg/kg	1050	1090	182	698	1340	947
Arsenic, TCLP	mg/L	--	--	--	--	--	--
Cadmium, TCLP	mg/L	--	--	--	--	--	--
Lead, TCLP	mg/L	--	--	--	--	--	--

Notes:

Bold, hilite indicates discrepancy between the field duplicate results.

-- = Indicates results not reported by this method.
>E = Result exceeds calibration range of instrument
ICP = Inductively Coupled Plasma
ID = Identification
J* = Qualified as estimated during QC evaluation
J- = Qualified as estimated during QC evaluation (Biased low)
mg/kg = milligrams per kilogram
mg/L = milligrams per Liter
TCLP = Toxicity Characteristic Leaching Procedure
U = Compound was not detected
XRF = X-Ray Fluorescence Spectroscopy

Data Quality Control Review

Date: February 12, 2007

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Shauna Lawrence

Laboratory Information: ODEQ - SEL

707 N. Robinson, Oklahoma City, OK 73102

Phone Number: 405-702-1113

Contact: Sara Downard, Project Manager

Laboratory Number(s):

405873 - 405885 (Water samples) _____

Signature of Reviewer: Shauna Lawrence

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review.

The following discrepancy was noted between the chains-of-custody (COCs) and the analytical results:

- The sample collected time for Sample MW-04D/GW03 was logged-in incorrectly as 14:15 for the total metals and general chemistry analyses. The correct sample collected time as noted on the COC was 19:22. The sample was logged-in with the correct sample time for the dissolved metals analysis.
- Nitrogen, nitrate is indicated as the general chemistry analysis for select water samples. Typically, the holding time for nitrate alone is 48 hours. Due to this short holding time, this analysis was performed on preserved sample volume and the reported result is for combined nitrate and nitrite.

One sample was collected and submitted for matrix spike/matrix spike duplicate (MS/MSD) analyses. This sample location is indicated in the Remarks section of the COC for the water samples.

2. Chain-of-Custody Documentation: COCs were appropriately signed.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): All analyses for the surface water and groundwater samples were analyzed within their required method holding time.
5. Method Blanks: No detections were noted in the method blanks.
6. Laboratory Control Sample (LCS): All LCS percent recoveries (RECs) were within their respective QC limits.
7. Matrix Spike (MS)/Matrix Spike Duplicate (MSD): The following spike amounts were less than one-fourth their sample concentration:

Analyte	Spiked Sample	Spike Amount	Sample Concentration
Sulfate	MW-04/GW03 (405875)	60 mg/L	399 mg/L
Zinc	MW-04/GW03 (405875)	200 ug/L	1830 ug/L
Zinc (Dissolved)	MW-04/GW03 (405921) Filtered Sample	200 ug/L	1790 ug/L

These spike amounts were too high and the sample concentrations too low to allow accurate recovery of the spikes. No conclusions could be made regarding the accuracy of the spikes. Analytical assessment was made by review of the associated LCS and/or field duplicate analyses.

All other MS/MSDs were performed on site-specific samples and were within QC limits.

8. Field Duplicates: The following samples were collected and analyzed in duplicate. The field duplicate comparison was assessed by comparing the results between the field duplicate pairs. If both results were less than five times the respective reporting limit, the sensitivity test was applied. If one or more of the results were greater than five times the reporting limit, the RPD was calculated. The RPD QC limit was 20 percent for water samples. The field duplicate pair was qualitative in nature and no data qualifiers were added based solely on the field duplicate comparison. All data were adequately replicated unless noted below:

- MW-03/GW03 and MW-1000/GW03 – All OK
 - FP-02/SW01 and FP-1000/SW01 – All OK
9. Data Consistency Check: The data were reviewed to determine if the results matched what was expected. No significant problems were discovered.
10. Sample Dilution and Reporting Limits: No dilutions were reported by the laboratory.
11. Laboratory Completeness: Samples were analyzed as requested. A total of 164 parameter data points were generated for the groundwater data. This included 52 total metal, 36 dissolved metal, and 76 general chemistry data points. No data was rejected (R) as a result of this review.
12. Data Qualification Summary: See attached Table 2 for a summary of sample results. No data qualifiers were added during the course of this review.

Attachments

Table 1 – Sample Collection Summary

Table 2 – Data Qualifiers

Table 3 – Field Duplicate Results – Surface Water and Groundwater Samples

Table 1
Sample Collection Summary
Surface Water and Groundwater Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample Name	Date Sampled	SDG	Laboratory ID(s)	Sample Type	Comment	Total Metals (ICP)	Dissolved Metals (ICP)	General Chemistry (See Note)
Surface Water Samples								
FP-01 / SW01	9/20/2006	2W1	405881	SW	Field Duplicate of FP-02/SW01	X		X
FP-02 / SW01	9/20/2006	2W1	405882	SW		X		X
FP-1000 / SW01	9/20/2006	2W1	405883	SW		X		X
FP-03 / SW01	9/20/2006	2W1	405884	SW		X		X
Groundwater Samples								
MW-01 / GW03	9/19/2006	2W2	405876-405922	GW	Field Duplicate of MW-3/GW03	X	X	X
MW-02 / GW03	9/19/2006	2W2	405877-405923	GW		X	X	X
MW-03 / GW03	9/19/2006	2W2	405873-405919	GW		X	X	X
MW-1000 / GW03	9/19/2006	2W2	405874-405920	GW		X	X	X
MW-04 / GW03	9/19/2006	2W2	405875-405921	GW		X	X	X
MW-04D / GW03	9/19/2006	2W2	405880-405926	GW		X	X	X
MW-05 / GW03	9/19/2006	2W2	405878-405924	GW		X	X	X
MW-06 / GW03	9/19/2006	2W2	405879-405925	GW		X	X	X
RW-01 / GW03	9/19/2006	2W2	405885-405927	GW		X	X	X

Notes: General Chemistry analyses include: chemical oxygen demand, alkalinity, nitrate, total organic carbon, chloride, and sulfate.

For instances where two laboratory IDs are noted, the first is for the total metals and general chemistry and the second is for the dissolved metals.

GW = Groundwater
ICP = Inductively Coupled Plasma
ID = Identification

SDG = Sample Delivery Group
SW = Surface Water

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Surface Water Samples								
FP-01 / SW01	9/20/2006	405881	METAL	Arsenic, Total	ug/L	10	U	
FP-01 / SW01	9/20/2006	405881	METAL	Cadmium, Total	ug/L	5	U	
FP-01 / SW01	9/20/2006	405881	METAL	Lead, Total	ug/L	10	U	
FP-01 / SW01	9/20/2006	405881	METAL	Zinc, Total	ug/L	5	U	
FP-01 / SW01	9/20/2006	405881	WQUAL	Alkalinity, Total	mg/L	110		
FP-01 / SW01	9/20/2006	405881	WQUAL	Chemical Oxygen Demand	mg/L	41.3		
FP-01 / SW01	9/20/2006	405881	WQUAL	Chloride	mg/L	25.2		
FP-01 / SW01	9/20/2006	405881	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
FP-01 / SW01	9/20/2006	405881	WQUAL	Sulfate	mg/L	14.4		
FP-01 / SW01	9/20/2006	405881	WQUAL	Total Organic Carbon	mg/L	13.4		
FP-02 / SW01	9/20/2006	405882	METAL	Arsenic, Total	ug/L	10	U	
FP-02 / SW01	9/20/2006	405882	METAL	Cadmium, Total	ug/L	5	U	
FP-02 / SW01	9/20/2006	405882	METAL	Lead, Total	ug/L	10	U	
FP-02 / SW01	9/20/2006	405882	METAL	Zinc, Total	ug/L	5	U	
FP-02 / SW01	9/20/2006	405882	WQUAL	Alkalinity, Total	mg/L	109		
FP-02 / SW01	9/20/2006	405882	WQUAL	Chemical Oxygen Demand	mg/L	44.8		
FP-02 / SW01	9/20/2006	405882	WQUAL	Chloride	mg/L	25.2		
FP-02 / SW01	9/20/2006	405882	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
FP-02 / SW01	9/20/2006	405882	WQUAL	Sulfate	mg/L	15.1		
FP-02 / SW01	9/20/2006	405882	WQUAL	Total Organic Carbon	mg/L	13.9		
FP-1000 / SW01	9/20/2006	405883	METAL	Arsenic, Total	ug/L	10	U	
FP-1000 / SW01	9/20/2006	405883	METAL	Cadmium, Total	ug/L	5	U	
FP-1000 / SW01	9/20/2006	405883	METAL	Lead, Total	ug/L	10	U	
FP-1000 / SW01	9/20/2006	405883	METAL	Zinc, Total	ug/L	5	U	
FP-1000 / SW01	9/20/2006	405883	WQUAL	Alkalinity, Total	mg/L	110		
FP-1000 / SW01	9/20/2006	405883	WQUAL	Chemical Oxygen Demand	mg/L	43.8		
FP-1000 / SW01	9/20/2006	405883	WQUAL	Chloride	mg/L	25.1		
FP-1000 / SW01	9/20/2006	405883	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
FP-1000 / SW01	9/20/2006	405883	WQUAL	Sulfate	mg/L	15.8		
FP-1000 / SW01	9/20/2006	405883	WQUAL	Total Organic Carbon	mg/L	13.8		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Surface Water Samples								
FP-03 / SW01	9/20/2006	405884	METAL	Arsenic, Total	ug/L	10	U	
FP-03 / SW01	9/20/2006	405884	METAL	Cadmium, Total	ug/L	5	U	
FP-03 / SW01	9/20/2006	405884	METAL	Lead, Total	ug/L	10	U	
FP-03 / SW01	9/20/2006	405884	METAL	Zinc, Total	ug/L	5	U	
FP-03 / SW01	9/20/2006	405884	WQUAL	Alkalinity, Total	mg/L	109		
FP-03 / SW01	9/20/2006	405884	WQUAL	Chemical Oxygen Demand	mg/L	43.3		
FP-03 / SW01	9/20/2006	405884	WQUAL	Chloride	mg/L	25.2		
FP-03 / SW01	9/20/2006	405884	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
FP-03 / SW01	9/20/2006	405884	WQUAL	Sulfate	mg/L	15.5		
FP-03 / SW01	9/20/2006	405884	WQUAL	Total Organic Carbon	mg/L	13.8		
Groundwater Samples								
MW-01 / GW03	9/19/2006	405876-405922	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-01 / GW03	9/19/2006	405876-405922	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-01 / GW03	9/19/2006	405876-405922	FMET	Lead, Dissolved	ug/L	10	U	
MW-01 / GW03	9/19/2006	405876-405922	FMET	Zinc, Dissolved	ug/L	5		
MW-01 / GW03	9/19/2006	405876-405922	METAL	Arsenic, Total	ug/L	10	U	
MW-01 / GW03	9/19/2006	405876-405922	METAL	Cadmium, Total	ug/L	5	U	
MW-01 / GW03	9/19/2006	405876-405922	METAL	Lead, Total	ug/L	10	U	
MW-01 / GW03	9/19/2006	405876-405922	METAL	Zinc, Total	ug/L	12		
MW-01 / GW03	9/19/2006	405876-405922	WQUAL	Alkalinity, Total	mg/L	318		
MW-01 / GW03	9/19/2006	405876-405922	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-01 / GW03	9/19/2006	405876-405922	WQUAL	Chloride	mg/L	21.5		
MW-01 / GW03	9/19/2006	405876-405922	WQUAL	Nitrogen, Nitrate as N	mg/L	0.45		
MW-01 / GW03	9/19/2006	405876-405922	WQUAL	Sulfate	mg/L	81		
MW-02 / GW03	9/19/2006	405877-405923	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-02 / GW03	9/19/2006	405877-405923	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-02 / GW03	9/19/2006	405877-405923	FMET	Lead, Dissolved	ug/L	10	U	
MW-02 / GW03	9/19/2006	405877-405923	FMET	Zinc, Dissolved	ug/L	56		
MW-02 / GW03	9/19/2006	405877-405923	METAL	Arsenic, Total	ug/L	10	U	
MW-02 / GW03	9/19/2006	405877-405923	METAL	Cadmium, Total	ug/L	5	U	
MW-02 / GW03	9/19/2006	405877-405923	METAL	Lead, Total	ug/L	10	U	
MW-02 / GW03	9/19/2006	405877-405923	METAL	Zinc, Total	ug/L	63		
MW-02 / GW03	9/19/2006	405877-405923	WQUAL	Alkalinity, Total	mg/L	342		
MW-02 / GW03	9/19/2006	405877-405923	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-02 / GW03	9/19/2006	405877-405923	WQUAL	Chloride	mg/L	800		
MW-02 / GW03	9/19/2006	405877-405923	WQUAL	Nitrogen, Nitrate as N	mg/L	0.71		
MW-02 / GW03	9/19/2006	405877-405923	WQUAL	Sulfate	mg/L	1970		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Groundwater Samples								
MW-03 / GW03	9/19/2006	405873-405919	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-03 / GW03	9/19/2006	405873-405919	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-03 / GW03	9/19/2006	405873-405919	FMET	Lead, Dissolved	ug/L	10	U	
MW-03 / GW03	9/19/2006	405873-405919	FMET	Zinc, Dissolved	ug/L	11		
MW-03 / GW03	9/19/2006	405873-405919	METAL	Arsenic, Total	ug/L	10	U	
MW-03 / GW03	9/19/2006	405873-405919	METAL	Cadmium, Total	ug/L	5	U	
MW-03 / GW03	9/19/2006	405873-405919	METAL	Lead, Total	ug/L	10	U	
MW-03 / GW03	9/19/2006	405873-405919	METAL	Zinc, Total	ug/L	12		
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Alkalinity, Total	mg/L	404		
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Chloride	mg/L	51.4		
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Nitrogen, Nitrate as N	mg/L	0.77		
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Sulfate	mg/L	391		
MW-03 / GW03	9/19/2006	405873-405919	WQUAL	Total Organic Carbon	mg/L	1.9		
MW-1000 / GW03	9/19/2006	405874-405920	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-1000 / GW03	9/19/2006	405874-405920	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-1000 / GW03	9/19/2006	405874-405920	FMET	Lead, Dissolved	ug/L	10	U	
MW-1000 / GW03	9/19/2006	405874-405920	FMET	Zinc, Dissolved	ug/L	9		
MW-1000 / GW03	9/19/2006	405874-405920	METAL	Arsenic, Total	ug/L	10	U	
MW-1000 / GW03	9/19/2006	405874-405920	METAL	Cadmium, Total	ug/L	5	U	
MW-1000 / GW03	9/19/2006	405874-405920	METAL	Lead, Total	ug/L	10	U	
MW-1000 / GW03	9/19/2006	405874-405920	METAL	Zinc, Total	ug/L	12		
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Alkalinity, Total	mg/L	417		
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Chloride	mg/L	56.1		
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Nitrogen, Nitrate as N	mg/L	0.7		
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Sulfate	mg/L	384		
MW-1000 / GW03	9/19/2006	405874-405920	WQUAL	Total Organic Carbon	mg/L	1.62		

Table 2
Data Qualifiers
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Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Groundwater Samples								
MW-04 / GW03	9/19/2006	405875-405921	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-04 / GW03	9/19/2006	405875-405921	FMET	Cadmium, Dissolved	ug/L	47		
MW-04 / GW03	9/19/2006	405875-405921	FMET	Lead, Dissolved	ug/L	10	U	
MW-04 / GW03	9/19/2006	405875-405921	FMET	Zinc, Dissolved	ug/L	1790		
MW-04 / GW03	9/19/2006	405875-405921	METAL	Arsenic, Total	ug/L	10	U	
MW-04 / GW03	9/19/2006	405875-405921	METAL	Cadmium, Total	ug/L	48		
MW-04 / GW03	9/19/2006	405875-405921	METAL	Lead, Total	ug/L	10	U	
MW-04 / GW03	9/19/2006	405875-405921	METAL	Zinc, Total	ug/L	1830		
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Alkalinity, Total	mg/L	224		
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Chloride	mg/L	10	U	
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Nitrogen, Nitrate as N	mg/L	0.17		
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Sulfate	mg/L	399		
MW-04 / GW03	9/19/2006	405875-405921	WQUAL	Total Organic Carbon	mg/L	1.31		
MW-04D / GW03	9/19/2006	405880-405926	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-04D / GW03	9/19/2006	405880-405926	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-04D / GW03	9/19/2006	405880-405926	FMET	Lead, Dissolved	ug/L	10	U	
MW-04D / GW03	9/19/2006	405880-405926	FMET	Zinc, Dissolved	ug/L	17		
MW-04D / GW03	9/19/2006	405880-405926	METAL	Arsenic, Total	ug/L	10	U	
MW-04D / GW03	9/19/2006	405880-405926	METAL	Cadmium, Total	ug/L	5	U	
MW-04D / GW03	9/19/2006	405880-405926	METAL	Lead, Total	ug/L	10	U	
MW-04D / GW03	9/19/2006	405880-405926	METAL	Zinc, Total	ug/L	16		
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Alkalinity, Total	mg/L	326		
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Chloride	mg/L	26.5		
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Sulfate	mg/L	839		
MW-04D / GW03	9/19/2006	405880-405926	WQUAL	Total Organic Carbon	mg/L	1.73		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Groundwater Samples								
MW-05 / GW03	9/19/2006	405878-405924	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-05 / GW03	9/19/2006	405878-405924	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-05 / GW03	9/19/2006	405878-405924	FMET	Lead, Dissolved	ug/L	10	U	
MW-05 / GW03	9/19/2006	405878-405924	FMET	Zinc, Dissolved	ug/L	77		
MW-05 / GW03	9/19/2006	405878-405924	METAL	Arsenic, Total	ug/L	10	U	
MW-05 / GW03	9/19/2006	405878-405924	METAL	Cadmium, Total	ug/L	5	U	
MW-05 / GW03	9/19/2006	405878-405924	METAL	Lead, Total	ug/L	10	U	
MW-05 / GW03	9/19/2006	405878-405924	METAL	Zinc, Total	ug/L	117		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Alkalinity, Total	mg/L	384		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Chemical Oxygen Demand	mg/L	5.5		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Chloride	mg/L	30.3		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Nitrogen, Nitrate as N	mg/L	0.17		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Sulfate	mg/L	2200		
MW-05 / GW03	9/19/2006	405878-405924	WQUAL	Total Organic Carbon	mg/L	1.82		
MW-06 / GW03	9/19/2006	405879-405925	FMET	Arsenic, Dissolved	ug/L	10	U	
MW-06 / GW03	9/19/2006	405879-405925	FMET	Cadmium, Dissolved	ug/L	5	U	
MW-06 / GW03	9/19/2006	405879-405925	FMET	Lead, Dissolved	ug/L	10	U	
MW-06 / GW03	9/19/2006	405879-405925	FMET	Zinc, Dissolved	ug/L	5	U	
MW-06 / GW03	9/19/2006	405879-405925	METAL	Arsenic, Total	ug/L	10	U	
MW-06 / GW03	9/19/2006	405879-405925	METAL	Cadmium, Total	ug/L	5	U	
MW-06 / GW03	9/19/2006	405879-405925	METAL	Lead, Total	ug/L	10	U	
MW-06 / GW03	9/19/2006	405879-405925	METAL	Zinc, Total	ug/L	5	U	
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Alkalinity, Total	mg/L	249		
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Chloride	mg/L	14.6		
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Nitrogen, Nitrate as N	mg/L	0.16		
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Sulfate	mg/L	448		
MW-06 / GW03	9/19/2006	405879-405925	WQUAL	Total Organic Carbon	mg/L	1.61		

Table 2
Data Qualifiers
Soil and Sediment Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID	Date Sampled	Laboratory ID	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier
Groundwater Samples								
RW-01 / GW03	9/19/2006	405885-405927	FMET	Arsenic, Dissolved	ug/L	10	U	
RW-01 / GW03	9/19/2006	405885-405927	FMET	Cadmium, Dissolved	ug/L	5	U	
RW-01 / GW03	9/19/2006	405885-405927	FMET	Lead, Dissolved	ug/L	10	U	
RW-01 / GW03	9/19/2006	405885-405927	FMET	Zinc, Dissolved	ug/L	10		
RW-01 / GW03	9/19/2006	405885-405927	METAL	Arsenic, Total	ug/L	10	U	
RW-01 / GW03	9/19/2006	405885-405927	METAL	Cadmium, Total	ug/L	5	U	
RW-01 / GW03	9/19/2006	405885-405927	METAL	Lead, Total	ug/L	10	U	
RW-01 / GW03	9/19/2006	405885-405927	METAL	Zinc, Total	ug/L	183		
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Alkalinity, Total	mg/L	365		
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Chemical Oxygen Demand	mg/L	5	U	
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Chloride	mg/L	11.1		
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Nitrogen, Nitrate as N	mg/L	0.1	U	
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Sulfate	mg/L	45.9		
RW-01 / GW03	9/19/2006	405885-405927	WQUAL	Total Organic Carbon	mg/L	1.66		

Note: For instances where two laboratory IDs are noted, the first is for the total metals and general chemistry and the second is for the dissolved metals.

FMET = Dissolved Metal
mg/L = milligrams per Liter
WQUAL = Water Quality

U = Compound was not detected
ug/L = micrograms per Liter

Table 3
Field Duplicate Results
Surface Water and Groundwater Samples
Remedial Investigation/Feasibility Study
Tulsa Fuel and Manufacturing, Collinsville, Oklahoma

Sample ID: Date Collected: Comments:		MW-03/GW03 09/19/2006	MW-1000/GW03 09/19/2006	FP-02/SW01 09/20/2006	FP-1000/SW01 09/20/2006
Parameter	Units				
Total Metals					
Arsenic, Total	ug/L	10 U	10 U	10 U	10 U
Cadmium, Total	ug/L	5 U	5 U	5 U	5 U
Lead, Total	ug/L	10 U	10 U	10 U	10 U
Zinc, Total	ug/L	12	12	5	5 U
Dissolved Metals					
Arsenic, Dissolved	ug/L	10 U	10 U	--	--
Cadmium, Dissolved	ug/L	5 U	5 U	--	--
Lead, Dissolved	ug/L	10 U	10 U	--	--
Zinc, Dissolved	ug/L	11	9	--	--
General Chemistry					
Chemical Oxygen Demand	mg/L	5 U	5 U	44.8	43.8
Alkalinity, Total	mg/L	404	417	109	110
Nitrogen, Nitrate	mg/L	0.77	0.70	0.10 U	0.10 U
Total Organic Carbon	mg/L	1.9	1.62	13.9	13.8
Chloride	mg/L	51.4	56.1	25.2	25.1
Sulfate	mg/L	391	384	15.1	15.8

Notes: Combined nitrate/nitrite reported for Nitrogen, nitrate. (See Text for further details)

-- = Indicates results not reported by this method.

ID = Identification

mg/L = milligrams per Liter

U = Compound was not detected

ug/L = micrograms per Liter

STL Burlington

Blackberry / Vegetation Sample Results

Data Quality Control Review

Date: September 27 through October 3, 2005

Project: Tulsa Fuel & Mfg Superfund Site - Collinsville

Project Number: 36478

Project Manager: Tracy Cooley

Data Reviewer(s): Sharon Shelton

Laboratory Information: STL Burlington

208 South Park Drive, Ste 1, Colchester, VT 05446

Phone Number: 802-655-1203

Contact: Don Dawicki, Project Manager

Laboratory Job Number(s):

<u>108227</u>	<u>108237</u>
<u>108141</u>	<u>108227A</u>
_____	_____
_____	_____
_____	_____

Signature of Reviewer: Sharon Shelton

1. Samples and Analyses: See Attached Table 1 for the samples and analyses included in this review. After submissions of samples, the Burns & McDonnell (BMCD) chemist contacted the laboratory to add analyses for pH and toxicity characteristic leaching procedure (TCLP) metals to certain samples. This represented a change to the sampling event as presented in the Remedial Investigation / Feasibility Study Field Sampling Plan (RI/FS FSP).
2. Chain-of-Custody Documentation: No problems were noted with the chain-of-custody.
3. Sample Preservation: No problems were noted with sample preservation.
4. Holding Time(s): Certain samples were collected in June 2004 and frozen until formal initiation of the RI/FS. These samples were analyzed outside of the 6-month hold time for metals. Results for vegetation and soil collected from similar locations in 2004 and 2005 were similar, which suggests a minimal deterioration of the metals data due to the extended hold time. In general, the metals tested (arsenic, cadmium, lead, and zinc) are not expected to deteriorate over extended holding times. No data were qualified due to this hold time exceedence.
5. Method Blanks:
 - **SDG 108141** – Cadmium, lead, and zinc were reported at concentrations below the reporting limit in the metal method blanks. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. All zinc results in the associated field samples were greater than five times the blank value and could not be discounted. Since the cadmium and lead results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified	Sample Name	Lab ID	U* Qualified
BM-UGB	627242	cadmium and lead	TFM-UGB-L-1	627227	cadmium
BM-WBB-L	627243	cadmium and lead	TFM-UGB-L-2	627233	cadmium
OX-UBB	627239	lead	TFM-UGB-1	627225	cadmium
OX-UBB-L	627240	cadmium and lead	TFM-UGB-2	627231	cadmium
OX-UGB	627241	lead	TFM-WBB-1	627229	cadmium
OX-WBB	627237	lead	TFM-WBB-2	627235	cadmium
OX-WBB-L	627238	cadmium	TFM-WBB-L-1	627224	cadmium
OX-WBB-R	627236	cadmium	TFM-WBB-L-2	627230	cadmium
TFM-UBB-1	627226	cadmium	TFM-WBB-R-1	627228	none
TFM-UBB-2	627232	cadmium	TFM-WBB-R-2	627234	none

- **SDG 108227** – Arsenic, cadmium, and zinc were reported at concentrations below the reporting limit in the metal method blanks. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. Additionally, lead was detected in the method blank at a concentration in excess of the reporting limit. The laboratory redigested and reanalyzed all samples and blanks associated with this data. Even higher concentrations of lead were noted in the blank associated with the reanalysis. Therefore, the lab reported the results for the first analysis.

Since arsenic, cadmium, lead, and/or zinc results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified
BG-EC-01/BR01U	627800	lead and zinc
BG-EC-01/BR01UDUP	627801	lead and zinc
BG-EC-01/BR01W	627799	lead and zinc
BG-EC-01/LV01U	627802	lead
BG-EC-01/LV01W	627803	lead
BG-EC-01/RT01W	627804	cadmium and lead
BM-UBB	627785	lead
BM-UBB-L	627784	cadmium and lead
BM-WBB	627786	lead
BM-WBB-R	627787	cadmium
EC-01/BR02U	627793	arsenic
EC-01/BR02W	627796	lead
EC-01/LV02U	627794	arsenic, cadmium, and lead
EC-01/LV02W	627797	cadmium and lead
EC-01/RT02W	627798	none
EC-02/BR02U	627788	cadmium and lead
EC-02/BR02W	627789	cadmium and lead
EC-02/LV02U	627790	cadmium
EC-02/LV02W	627791	cadmium
EC-02/RT02W	627792	none
EC-1000/LV02U	627795	arsenic, cadmium, and lead

- **SDG 108227A** – SDG 108227A contained a reanalysis for two berry samples. Arsenic, cadmium, and zinc were reported at concentrations below the reporting limit in the metal method blank. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. All zinc results in the associated field samples were greater than five times the blank value and could not be discounted. Since the cadmium and arsenic results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified
EC-01/BR02U	627793B	none
EC-02/BR02U	627788B	arsenic and cadmium

- **SDG 108237** – Arsenic and cadmium were reported at concentrations below the reporting limit in the metal method blanks. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. Additionally, lead and zinc were detected in the method blank at a concentration in excess of the reporting limit. The laboratory redigested and reanalyzed all samples and blanks associated with this data. The reanalysis resolved the problem (i.e., lead and zinc were non-detect in the blanks of the second analysis), and the lab reported the results for the second analysis.

All arsenic results in the associated samples exceeded five times the blank value and could not be discounted. Since the cadmium results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified
BG-EC-01/SS02	627869	cadmium
BM-BB-S	627865	none
EC-01/SS02	627868	none
EC-02/SS02	627866	none
OX-BB-S	627864	cadmium
TFM-BB-S-1	627858	none
TFM-BB-S-2	627861	none
TFM-BB-W-1	627859	none
TFM-BB-W-2	627863	none

6. Equipment Blanks: STL prepared an equipment blank during sample preparation and homogenization of the vegetation samples. The equipment blank was carried through the analytical with the vegetation samples.

- **SDG 108141** – Arsenic, lead, and zinc were reported at concentrations below the reporting limit in the equipment blank. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. Lead results were previously qualified in the associated field samples due to laboratory method blank results. Further qualification for lead was not required based upon the equipment blank. All zinc results were greater than five times the equipment blank value and could not be discounted. Since the arsenic results for the following field samples were less than five times the blank value, these results were disregarded as false positive and qualified as undetected (U*) as noted on Table 2.

Sample Name	Lab ID	U* Qualified	Sample Name	Lab ID	U* Qualified
BM-UGB	627242	arsenic	TFM-UBB-L-1	627227	none
BM-WBB-L	627243	arsenic	TFM-UBB-L-2	627233	none
OX-UBB	627239	arsenic	TFM-UGB-1	627225	arsenic
OX-UBB-L	627240	arsenic	TFM-UGB-2	627231	none
OX-UGB	627241	arsenic	TFM-WBB-1	627229	arsenic
OX-WBB	627237	arsenic	TFM-WBB-2	627235	none
OX-WBB-L	627238	arsenic	TFM-WBB-L-1	627224	none
OX-WBB-R	627236	none	TFM-WBB-L-2	627230	none
TFM-UBB-1	627226	none	TFM-WBB-R-1	627228	none
TFM-UBB-2	627232	none	TFM-WBB-R-2	627234	none

- **SDG 180227** – Lead and zinc were reported at concentrations below the reporting limit in the equipment blank. While these results indicate the potential for cross contamination, corrective action was not required by the lab since the results were below the reporting limit. Lead and zinc results were previously qualified in the associated field samples due to laboratory method blank results. Further qualification for lead was not required based upon the equipment blank.
7. Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD): All LCS results were within QC limits.
8. Matrix Spike (MS)/Matrix Spike Duplicate (MSD):
- **SDG 108141** – The laboratory used Sample TFM-WBB-2 (Lab ID 627235) as the MS sample. The spike amount for zinc was less than one-fourth of the original, unspiked concentration for

Sample TFM-WBB-2. As such, no conclusion regarding the accuracy of the zinc results could be made using this MS. Instead accuracy was assessed using the LCS results.

The MS recovery for arsenic and zinc were slightly below QC limits, which suggests potential low bias. To indicate the potential low bias, the arsenic and zinc results for the following field samples were qualified as estimated, low-bias (J-) as noted on Table 2:

Sample Name	Lab ID	J- Qualified	Sample Name	Lab ID	J- Qualified
BM-UGB	627242	zinc	TFM-UBB-L-1	627227	arsenic and zinc
BM-WBB-L	627243	zinc	TFM-UBB-L-2	627233	arsenic and zinc
OX-UBB	627239	zinc	TFM-UGB-1	627225	zinc
OX-UBB-L	627240	zinc	TFM-UGB-2	627231	arsenic and zinc
OX-UGB	627241	zinc	TFM-WBB-1	627229	zinc
OX-WBB	627237	zinc	TFM-WBB-2	627235	arsenic and zinc
OX-WBB-L	627238	zinc	TFM-WBB-L-1	627224	arsenic and zinc
OX-WBB-R	627236	arsenic and zinc	TFM-WBB-L-2	627230	arsenic and zinc
TFM-UBB-1	627226	arsenic and zinc	TFM-WBB-R-1	627228	arsenic and zinc
TFM-UBB-2	627232	arsenic and zinc	TFM-WBB-R-2	627234	arsenic and zinc

Note: Arsenic results for the samples were only qualified as estimated, low-bias (J-) if not previously qualified as undetected (U*) during the blank evaluation.

- **SDG 108227** - The laboratory used Sample EC-01/BR02W (Lab ID 627796) as the MS sample. All results were within QC limits.
- **SDG 108237** - The laboratory used Sample EC-02/SS02 (Lab ID 627866) as the MS sample for the metals analysis. The spike amounts for arsenic, cadmium, lead, and zinc were less than one-fourth of the original, unspiked concentration for Sample EC-02/SS02. As such, no conclusion regarding the accuracy of the metal results could be made using this MS. Instead accuracy was assessed using the LCS results.

Additionally, Sample EC-02/SS02 was used as the MS sample for the TCLP metals analysis. The spike amounts for cadmium and lead were less than one-fourth of the original, unspiked concentration for Sample EC-02/SS02. As such, no conclusion regarding the accuracy of the TCLP metals results could be made using this MS. Instead accuracy was assessed using the LCS results.

9. Laboratory Duplicates:

- **SDG 108141** – The laboratory used Sample TFM-WBB-2 (Lab ID 627235) as the laboratory duplicate sample. The relative percent difference (RPD) for lead exceeded the QC criteria, indicating a potential precision problem with the data. To indicate the potential problem, lead results for the following samples were qualified as estimated (J*) as noted on Table 2.

Sample Name	Lab ID	J* Qualified	Sample Name	Lab ID	J* Qualified
BM-UGB	627242	none	TFM-UBB-L-1	627227	lead
BM-WBB-L	627243	none	TFM-UBB-L-2	627233	lead
OX-UBB	627239	none	TFM-UGB-1	627225	lead
OX-UBB-L	627240	none	TFM-UGB-2	627231	lead

Sample Name	Lab ID	J* Qualified	Sample Name	Lab ID	J* Qualified
OX-UGB	627241	none	TFM-WBB-1	627229	lead
OX-WBB	627237	none	TFM-WBB-2	627235	lead
OX-WBB-L	627238	lead	TFM-WBB-L-1	627224	lead
OX-WBB-R	627236	lead	TFM-WBB-L-2	627230	lead
TFM-UBB-1	627226	lead	TFM-WBB-R-1	627228	lead
TFM-UBB-2	627232	lead	TFM-WBB-R-2	627234	lead

Note: Lead results for the samples were only qualified as estimated (J*) if not previously qualified as undetected (U*) during the blank evaluation.

- **SDG 108227** - The laboratory used Sample EC-01/BR02W (Lab ID 627796) as the laboratory duplicate sample. All results were within QC limits.
- **SDG 108237** - The laboratory used Sample EC-02/SS02 (Lab ID 627866) as the laboratory duplicate sample. All results were within QC limits.

10. Field Duplicates: The following samples were collected and analyzed in duplicate:

- BG-EC-01/BR01U and BG-EC-01/BR01UDUP (Table 3) – All data were adequately replicated.
- EC-01/LV02U and EC-1000/LV02U (Table 4) – All data were adequately replicated.

11. Data Consistency Check: The data were reviewed to determine if the results matched what was expected. That is, on-site samples exhibited higher metal concentrations than background or off-site samples. During this review, it was noted that the results for unwashed blackberry samples EC-01/BR02U (Barry Moore Property, Lab ID 627793) and EC-02/BR02U (TFM Property, Lab ID 627788) exhibited unexpected results. The off-site sample EC-01/BR02U exhibited more elevated metal results than TFM sample EC-02/BR02U. It was suspected that the samples were inadvertently switched at some point between field sampling and reporting of results. The laboratory re-extracted and reanalyzed the samples.

The reanalyses generally confirmed the original results; however, an exception was noted for lead in unwashed blackberry sample EC-01/BR02U (Barry Moore Property, Lab ID 627793B). The lead result for the reanalysis of EC-01/BR02U was significantly lower than the initial analysis (see Table 5). Upon further review, STL indicated that the initial lead result was likely elevated due to cross-contamination problems experienced in the lab at the time of initial analysis. This assumption is supported by lead detections noted in the preparation and lab equipment blanks at the time of the initial analysis (See Sections 5 and 6). For this reason, STL indicated that the lead result for the reanalysis of EC-01/BR02U (Lab ID 627793B) was the most appropriate result to use. The initial result for EC-01/BR02U (Lab ID 627793) was qualified as rejected (R).

12. Sample Dilution and Reporting Limits: The following samples were diluted in order to bring target analyte concentrations within the calibration range of the instrument.

- **SDG 108141** -

Sample Name	Lab ID	Constituent	Dilution Factor
TFM-WBB-R-1	627228	lead and zinc	10

Sample Name	Lab ID	Constituent	Dilution Factor
TFM-UBB-L-2	627230	zinc	10
TFM-WBB-R-2	627234	zinc	10

- **SDG 108227 -**

Sample Name	Lab ID	Constituent	Dilution Factor
EC-02/RT02W	627792	lead	500

- **SDG 108237 -**

Sample Name	Lab ID	Constituent	Dilution Factor
TFM-BB-W-1		TCLP arsenic, cadmium, and lead	100
TFM-BB-S-2		TCLP arsenic, cadmium, and lead	100
EC-02/SS02		TCLP arsenic, cadmium, and lead	100
TFM-BB-S-1		arsenic, cadmium, lead, and zinc	100
TFM-BB-W-1		arsenic, cadmium, lead, and zinc	100
TFM-BB-S-2		arsenic, cadmium, lead, and zinc	100
TFM-BB-W-2		arsenic, cadmium, lead, and zinc	100
EC-02/SS02		arsenic, cadmium, lead, and zinc	100

13. Laboratory Completeness: Samples were analyzed as requested. A total of 229 parameter data points were generated for these data packages. The lead result for one sample was rejected (R) due to likely cross-contamination caused at the laboratory. Laboratory completeness was 99.6%.

14. Data Qualification Summary: See attached Table 2 for a summary of sample results and data qualifiers applied during the course of the review.

Attachments

Table 1 – Sample and Analysis Summary

Table 2 – Data Qualification Summary

Table 3 – Field Duplicate Results – BG-EC-BR01U and BG-EC-01/BR01UDUP

Table 4 – Field Duplicate Results – EC-01/LV02U and EC-1000/LV02U

Table 5 – Comparison of Initial and Reanalysis Data – EC-01/BR02U and EC-02/BR02U

Table 1
Sample and Analysis Summary

Sample Name	Date Collected	Lab	SDG	Lab Number	Matrix	Location	Comment	Analysis		
								As, Cd, Pb, Zn	TCLP As, Cd, Pb	pH
BM-UBB-L	06/16/04	STL-Burlington	108227	See Analysis	Leaves - Unwashed	Off-Site B.Moore Property	Reanalysis	627784		
BM-UBB-L	06/16/04	STL-Burlington	108227	See Analysis	Berries - Unwashed	Off-Site B.Moore Property		627785		
BM-WBB	06/16/04	STL-Burlington	108227	See Analysis	Berries - Washed	Off-Site B.Moore Property		627786		
BM-WBB-R	06/16/04	STL-Burlington	108227	See Analysis	Roots - Washed	Off-Site B.Moore Property		627787		
EC-02/BR02U	06/28/05	STL-Burlington	108227	See Analysis	Berries - Unwashed	TFM		627788		
EC-02/BR02U	06/28/05	STL-Burlington	108227A	See Analysis	Berries - Unwashed	TFM		627788B		
EC-02/BR02W	06/28/05	STL-Burlington	108227	See Analysis	Berries - Washed	TFM		627789		
EC-02/LV02U	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Unwashed	TFM		627790		
EC-02/LV02W	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Washed	TFM		627791		
EC-02/RT02W	06/28/05	STL-Burlington	108227	See Analysis	Roots - Washed	TFM		627792		
EC-01/BR02U	06/28/05	STL-Burlington	108227	See Analysis	Berries - Unwashed	Off-Site B.Moore Property	Dup of EC-01/LV02U MS / Duplicate Location	627793		
EC-01/BR02U	06/28/05	STL-Burlington	108227A	See Analysis	Berries - Unwashed	Off-Site B.Moore Property		627793B		
EC-01/LV02U	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Unwashed	Off-Site B.Moore Property		627794		
EC-1000/LV02U	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Unwashed	Off-Site B.Moore Property		627795		
EC-01/BR02W	06/28/05	STL-Burlington	108227	See Analysis	Berries - Washed	Off-Site B.Moore Property		627796		
EC-01/LV02W	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Washed	Off-Site B.Moore Property		627797		
EC-01/RT02W	06/28/05	STL-Burlington	108227	See Analysis	Roots - Washed	Off-Site B.Moore Property		627798		
BG-EC-01/BR01W	06/28/05	STL-Burlington	108227	See Analysis	Berries - Washed	Background - Oxley Nature Center		627799		
BG-EC-01/BR01U	06/28/05	STL-Burlington	108227	See Analysis	Berries - Unwashed	Background - Oxley Nature Center		627800		
BG-EC-01/BR01UDUP	06/28/05	STL-Burlington	108227	See Analysis	Berries - Unwashed	Background - Oxley Nature Center		627801		
BG-EC-01/LV01U	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Unwashed	Background - Oxley Nature Center	Dup of BG-EC-01/BR01U	627802		
BG-EC-01/LV01W	06/28/05	STL-Burlington	108227	See Analysis	Leaves - Washed	Background - Oxley Nature Center		627803		
BG-EC-01/RT01W	06/28/05	STL-Burlington	108227	See Analysis	Roots - Washed	Background - Oxley Nature Center		627804		
EB2	NA	STL-Burlington	108227	See Analysis	Water	Laboratory Generated		627805		
TFM-BB-S-1	06/16/04	STL-Burlington	108237	See Analysis	Soil	TFM	MS / Duplicate Location	627858		
TFM-BB-W-1	06/16/04	STL-Burlington	108237	See Analysis	Waste	TFM		627859		
TFM-BB-S-2	06/22/04	STL-Burlington	108237	See Analysis	Soil	TFM		627861		
TFM-BB-W-2	06/22/04	STL-Burlington	108237	See Analysis	Waste	TFM		627863		
OX-BB-S	06/16/04	STL-Burlington	108237	See Analysis	Soil	Background - Oxley Nature Center		627864		
BM-BB-S	06/16/04	STL-Burlington	108237	See Analysis	Soil	Off-Site B.Moore Property		627865		
EC-02/SS02	06/28/05	STL-Burlington	108237	See Analysis	Soil	TFM		627866		
EC-01/SS02	06/28/05	STL-Burlington	108237	See Analysis	Soil	Off-Site B.Moore Property		627868		
BG-EC-01/SS02	06/28/05	STL-Burlington	108237	See Analysis	Soil	Background - Oxley Nature Center		627869		

Table 1
Sample and Analysis Summary

Sample Name	Date Collected	Lab	SDG	Lab Number	Matrix	Location	Comment	Analysis		
								As, Cd, Pb, Zn	TCLP As, Cd, Pb	pH
TFM-WBB-L-1	06/16/04	STL-Burlington	108141	See Analysis	Leaves - Washed	TFM		627224		
TFM-UGB-1	06/16/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	TFM		627225		
TFM-UBB-1	06/16/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	TFM		627226		
TFM-UBB-L-1	06/16/04	STL-Burlington	108141	See Analysis	Leaves - Unwashed	TFM		627227		
TFM-WBB-R-1	06/16/04	STL-Burlington	108141	See Analysis	Roots - Washed	TFM		627228		
TFM-WBB-1	06/16/04	STL-Burlington	108141	See Analysis	Berries - Washed	TFM		627229		
TFM-WBB-L-2	06/22/04	STL-Burlington	108141	See Analysis	Leaves - Washed	TFM		627230		
TFM-UGB-2	06/22/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	TFM		627231		
TFM-UBB-2	06/22/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	TFM		627232		
TFM-UBB-L-2	06/22/04	STL-Burlington	108141	See Analysis	Leaves - Unwashed	TFM		627233		
TFM-WBB-R-2	06/22/04	STL-Burlington	108141	See Analysis	Roots - Washed	TFM		627234		
TFM-WBB-2	06/22/04	STL-Burlington	108141	See Analysis	Berries - Washed	TFM		627235		
OX-WBB-R	06/16/04	STL-Burlington	108141	See Analysis	Roots - Washed	Background - Oxley Nature Center		627236		
OX-WBB	06/16/04	STL-Burlington	108141	See Analysis	Berries - Washed	Background - Oxley Nature Center		627237		
OX-WBB-L	06/16/04	STL-Burlington	108141	See Analysis	Leaves - Washed	Background - Oxley Nature Center		627238		
OX-UBB	06/16/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	Background - Oxley Nature Center		627239		
OX-UBB-L	06/16/04	STL-Burlington	108141	See Analysis	Leaves - Unwashed	Background - Oxley Nature Center		627240		
OX-UGB	06/16/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	Background - Oxley Nature Center		627241		
BM-UGB	06/16/04	STL-Burlington	108141	See Analysis	Berries - Unwashed	Off-Site B.Moore Property		627242		
BM-WBB-L	06/16/04	STL-Burlington	108141	See Analysis	Leaves - Washed	Off-Site B.Moore Property		627243		
EB1	NA	STL-Burlington	108141	See Analysis	Water	Laboratory Generated	Lab equipment blank	627244		

As = Arsenic

Cd = Cadmium

Dup = Duplicate

MS = Matrix Spike

Pb = Lead

SDG = Sample Delivery Group

STL-Burlington = Severn Trent Laboratories - Burlington, Vermont

TCLP = Toxicity Characteristic Leaching Procedure

TFM = Tulsa Fuel and Manufacturing

Zn = Zinc

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
TFM-WBB-L-1	108141	627224	6/16/2004	METAL	Arsenic	mg/Kg	0.069	J		MS recovery slightly below limit, slight low bias possible. Since already J qualified by lab, J- was not added.
TFM-WBB-L-1	108141	627224	6/16/2004	METAL	Cadmium	mg/Kg	0.36		U*	Blank contamination. Disregarded as false positive.
TFM-WBB-L-1	108141	627224	6/16/2004	METAL	Lead	mg/Kg	2.7		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-L-1	108141	627224	6/16/2004	METAL	Zinc	mg/Kg	13		J-	MS recovery below limit, low bias possible
TFM-UGB-1	108141	627225	6/16/2004	METAL	Arsenic	mg/Kg	0.048	J	U*	Blank contamination. Disregarded as false positive.
TFM-UGB-1	108141	627225	6/16/2004	METAL	Cadmium	mg/Kg	0.43		U*	Blank contamination. Disregarded as false positive.
TFM-UGB-1	108141	627225	6/16/2004	METAL	Lead	mg/Kg	1.4		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UGB-1	108141	627225	6/16/2004	METAL	Zinc	mg/Kg	10.2		J-	MS recovery below limit, low bias possible
TFM-UBB-1	108141	627226	6/16/2004	METAL	Arsenic	mg/Kg	0.39		J-	MS recovery slightly below limit, slight low bias possible
TFM-UBB-1	108141	627226	6/16/2004	METAL	Cadmium	mg/Kg	0.26		U*	Blank contamination. Disregarded as false positive.
TFM-UBB-1	108141	627226	6/16/2004	METAL	Lead	mg/Kg	32.9		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UBB-1	108141	627226	6/16/2004	METAL	Zinc	mg/Kg	30.9		J-	MS recovery below limit, low bias possible
TFM-UBB-L-1	108141	627227	6/16/2004	METAL	Arsenic	mg/Kg	0.37		J-	MS recovery slightly below limit, slight low bias possible
TFM-UBB-L-1	108141	627227	6/16/2004	METAL	Cadmium	mg/Kg	0.74		U*	Blank contamination. Disregarded as false positive.
TFM-UBB-L-1	108141	627227	6/16/2004	METAL	Lead	mg/Kg	16.2		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UBB-L-1	108141	627227	6/16/2004	METAL	Zinc	mg/Kg	42.6		J-	MS recovery below limit, low bias possible
TFM-WBB-R-1	108141	627228	6/16/2004	METAL	Arsenic	mg/Kg	1.6		J-	MS recovery slightly below limit, slight low bias possible
TFM-WBB-R-1	108141	627228	6/16/2004	METAL	Lead	mg/Kg	237		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-R-1	108141	627228	6/16/2004	METAL	Zinc	mg/Kg	365		J-	MS recovery below limit, low bias possible
TFM-WBB-1	108141	627229	6/16/2004	METAL	Arsenic	mg/Kg	0.048	J	U*	Blank contamination. Disregarded as false positive.
TFM-WBB-1	108141	627229	6/16/2004	METAL	Cadmium	mg/Kg	0.21		U*	Blank contamination. Disregarded as false positive.
TFM-WBB-1	108141	627229	6/16/2004	METAL	Lead	mg/Kg	3.3		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-1	108141	627229	6/16/2004	METAL	Zinc	mg/Kg	6.9		J-	MS recovery below limit, low bias possible
TFM-WBB-L-2	108141	627230	6/22/2004	METAL	Arsenic	mg/Kg	0.17		J-	MS recovery slightly below limit, slight low bias possible
TFM-WBB-L-2	108141	627230	6/22/2004	METAL	Cadmium	mg/Kg	0.26		U*	Blank contamination. Disregarded as false positive.
TFM-WBB-L-2	108141	627230	6/22/2004	METAL	Lead	mg/Kg	5.7		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-L-2	108141	627230	6/22/2004	METAL	Zinc	mg/Kg	19.1		J-	MS recovery below limit, low bias possible

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
TFM-UGB-2	108141	627231	6/22/2004	METAL	Arsenic	mg/Kg	0.057	J		MS recovery slightly below limit, slight low bias possible. Since already J qualified by lab, J* was not added.
TFM-UGB-2	108141	627231	6/22/2004	METAL	Cadmium	mg/Kg	0.4		U*	Blank contamination. Disregarded as false positive.
TFM-UGB-2	108141	627231	6/22/2004	METAL	Lead	mg/Kg	2.1		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UGB-2	108141	627231	6/22/2004	METAL	Zinc	mg/Kg	10.4		J-	MS recovery below limit, low bias possible
TFM-UBB-2	108141	627232	6/22/2004	METAL	Arsenic	mg/Kg	0.36		J-	MS recovery slightly below limit, slight low bias possible
TFM-UBB-2	108141	627232	6/22/2004	METAL	Cadmium	mg/Kg	0.17	J	U*	Blank contamination. Disregarded as false positive.
TFM-UBB-2	108141	627232	6/22/2004	METAL	Lead	mg/Kg	16.2		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UBB-2	108141	627232	6/22/2004	METAL	Zinc	mg/Kg	27		J-	MS recovery below limit, low bias possible
TFM-UBB-L-2	108141	627233	6/22/2004	METAL	Arsenic	mg/Kg	0.76		J-	MS recovery slightly below limit, slight low bias possible
TFM-UBB-L-2	108141	627233	6/22/2004	METAL	Cadmium	mg/Kg	0.71		U*	Blank contamination. Disregarded as false positive.
TFM-UBB-L-2	108141	627233	6/22/2004	METAL	Lead	mg/Kg	38.5		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-UBB-L-2	108141	627233	6/22/2004	METAL	Zinc	mg/Kg	76.1		J-	MS recovery below limit, low bias possible
TFM-WBB-R-2	108141	627234	6/22/2004	METAL	Arsenic	mg/Kg	0.59		J-	MS recovery slightly below limit, slight low bias possible
TFM-WBB-R-2	108141	627234	6/22/2004	METAL	Lead	mg/Kg	142		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-R-2	108141	627234	6/22/2004	METAL	Zinc	mg/Kg	178		J-	MS recovery below limit, low bias possible
TFM-WBB-2	108141	627235	6/22/2004	METAL	Arsenic	mg/Kg	0.099	J		MS recovery slightly below limit, slight low bias possible. Since already J qualified by lab, J- was not added.
TFM-WBB-2	108141	627235	6/22/2004	METAL	Cadmium	mg/Kg	0.1	J	U*	Blank contamination. Disregarded as false positive.
TFM-WBB-2	108141	627235	6/22/2004	METAL	Lead	mg/Kg	6.7		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
TFM-WBB-2	108141	627235	6/22/2004	METAL	Zinc	mg/Kg	6.5		J-	MS recovery below limit, low bias possible
OX-WBB-R	108141	627236	6/16/2004	METAL	Arsenic	mg/Kg	0.15	J		MS recovery slightly below limit, slight low bias possible. Since already J qualified by lab, J- was not added.
OX-WBB-R	108141	627236	6/16/2004	METAL	Cadmium	mg/Kg	0.07	J	U*	Blank contamination. Disregarded as false positive.
OX-WBB-R	108141	627236	6/16/2004	METAL	Lead	mg/Kg	9.3		J*	RPD exceeds limit for duplicate. Precision outside of control limit.
OX-WBB-R	108141	627236	6/16/2004	METAL	Zinc	mg/Kg	17.1		J-	MS recovery below limit, low bias possible
OX-WBB	108141	627237	6/16/2004	METAL	Arsenic	mg/Kg	0.014	J	U*	Blank contamination. Disregarded as false positive.
OX-WBB	108141	627237	6/16/2004	METAL	Lead	mg/Kg	0.22		U*	Blank contamination. Disregarded as false positive.
OX-WBB	108141	627237	6/16/2004	METAL	Zinc	mg/Kg	2.1		J-	MS recovery below limit, low bias possible

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
OX-WBB-L	108141	627238	6/16/2004	METAL	Arsenic	mg/Kg	0.039	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. RPD exceeds limit for duplicate. Precision outside of control limit. MS recovery below limit, low bias possible
OX-WBB-L	108141	627238	6/16/2004	METAL	Cadmium	mg/Kg	0.012	J	U*	
OX-WBB-L	108141	627238	6/16/2004	METAL	Lead	mg/Kg	0.91		J*	
OX-WBB-L	108141	627238	6/16/2004	METAL	Zinc	mg/Kg	7.6		J-	
OX-UBB	108141	627239	6/16/2005	METAL	Arsenic	mg/Kg	0.014	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. MS recovery below limit, low bias possible
OX-UBB	108141	627239	6/16/2005	METAL	Lead	mg/Kg	0.19		U*	
OX-UBB	108141	627239	6/16/2005	METAL	Zinc	mg/Kg	2.3		J-	
OX-UBB-L	108141	627240	6/16/2004	METAL	Arsenic	mg/Kg	0.051	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. MS recovery below limit, low bias possible
OX-UBB-L	108141	627240	6/16/2004	METAL	Cadmium	mg/Kg	0.013	J	U*	
OX-UBB-L	108141	627240	6/16/2004	METAL	Lead	mg/Kg	0.45		U*	
OX-UBB-L	108141	627240	6/16/2004	METAL	Zinc	mg/Kg	7.3		J-	
OX-UGB	108141	627241	6/16/2004	METAL	Arsenic	mg/Kg	0.012	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. MS recovery below limit, low bias possible
OX-UGB	108141	627241	6/16/2004	METAL	Lead	mg/Kg	0.19		U*	
OX-UGB	108141	627241	6/16/2004	METAL	Zinc	mg/Kg	2.1		J-	
BM-UGB	108141	627242	6/16/2004	METAL	Arsenic	mg/Kg	0.014	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. MS recovery below limit, low bias possible
BM-UGB	108141	627242	6/16/2004	METAL	Cadmium	mg/Kg	0.034	J	U*	
BM-UGB	108141	627242	6/16/2004	METAL	Lead	mg/Kg	0.69		U*	
BM-UGB	108141	627242	6/16/2004	METAL	Zinc	mg/Kg	8.9		J-	
BM-WBB-L	108141	627243	6/16/2004	METAL	Arsenic	mg/Kg	0.012	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive. MS recovery below limit, low bias possible
BM-WBB-L	108141	627243	6/16/2004	METAL	Cadmium	mg/Kg	0.027	J	U*	
BM-WBB-L	108141	627243	6/16/2004	METAL	Lead	mg/Kg	0.28		U*	
BM-WBB-L	108141	627243	6/16/2004	METAL	Zinc	mg/Kg	11.9		J-	
BM-UBB-L	108227	627784	6/16/2004	METAL	Cadmium	mg/Kg	0.039	J	U*	Blank contamination. Disregarded as false positive. Blank contamination. Disregarded as false positive.
BM-UBB-L	108227	627784	6/16/2004	METAL	Lead	mg/Kg	0.29		U*	
BM-UBB	108227	627785	6/16/2004	METAL	Lead	mg/Kg	0.18		U*	Blank contamination. Disregarded as false positive.
BM-WBB	108227	627786	6/16/2004	METAL	Lead	mg/Kg	0.19	J	U*	Blank contamination. Disregarded as false positive.
BM-WBB-R	108227	627787	6/16/2004	METAL	Cadmium	mg/Kg	0.35		U*	Blank contamination. Disregarded as false positive.

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
EC-02/BR02U	108227	627788	6/28/2005	METAL	Cadmium	mg/Kg	0.044	J	U*	Blank contamination. Disregarded as false positive.
EC-02/BR02U	108227	627788	6/28/2005	METAL	Lead	mg/Kg	0.9		U*	Blank contamination. Disregarded as false positive.
EC-02/BR02U	108227A	627788B	6/28/2005	METAL	Arsenic	mg/Kg	0.011	J	U*	Blank contamination. Disregarded as false positive.
EC-02/BR02U	108227A	627788B	6/28/2005	METAL	Cadmium	mg/Kg	0.061	J	U*	Blank contamination. Disregarded as false positive.
EC-02/BR02W	108227	627789	6/28/2005	METAL	Cadmium	mg/Kg	0.043	J	U*	Blank contamination. Disregarded as false positive.
EC-02/BR02W	108227	627789	6/28/2005	METAL	Lead	mg/Kg	0.76		U*	Blank contamination. Disregarded as false positive.
EC-02/LV02U	108227	627790	6/28/2005	METAL	Cadmium	mg/Kg	0.32		U*	Blank contamination. Disregarded as false positive.
EC-02/LV02W	108227	627791	6/28/2005	METAL	Cadmium	mg/Kg	0.15	J	U*	Blank contamination. Disregarded as false positive.
EC-01/BR02U	108227	627793	6/28/2005	METAL	Arsenic	mg/Kg	0.029	J	U*	Blank contamination. Disregarded as false positive.
EC-01/BR02U	108227	627793	6/28/2005	METAL	Lead	mg/Kg	30		R	Lab indicated high potential for cross-contamination. Recommended use of reanalysis data (Lab ID 627793B).
EC-01/LV02U	108227	627794	6/28/2005	METAL	Arsenic	mg/Kg	0.047	J	U*	Blank contamination. Disregarded as false positive.
EC-01/LV02U	108227	627794	6/28/2005	METAL	Cadmium	mg/Kg	0.036	J	U*	Blank contamination. Disregarded as false positive.
EC-01/LV02U	108227	627794	6/28/2005	METAL	Lead	mg/Kg	1.8		U*	Blank contamination. Disregarded as false positive.
EC-1000/LV02U	108227	627795	6/28/2005	METAL	Arsenic	mg/Kg	0.028	J	U*	Blank contamination. Disregarded as false positive.
EC-1000/LV02U	108227	627795	6/28/2005	METAL	Cadmium	mg/Kg	0.035	J	U*	Blank contamination. Disregarded as false positive.
EC-1000/LV02U	108227	627795	6/28/2005	METAL	Lead	mg/Kg	0.91		U*	Blank contamination. Disregarded as false positive.
EC-01/BR02W	108227	627796	6/28/2005	METAL	Lead	mg/Kg	0.41		U*	Blank contamination. Disregarded as false positive.
EC-01/LV02W	108227	627797	6/28/2005	METAL	Cadmium	mg/Kg	0.018	J	U*	Blank contamination. Disregarded as false positive.
EC-01/LV02W	108227	627797	6/28/2005	METAL	Lead	mg/Kg	0.75		U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01W	108227	627799	6/28/2005	METAL	Lead	mg/Kg	0.095	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01W	108227	627799	6/28/2005	METAL	Zinc	mg/Kg	1.4	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01U	108227	627800	6/28/2005	METAL	Lead	mg/Kg	0.057	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01U	108227	627800	6/28/2005	METAL	Zinc	mg/Kg	1.5	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01UDUP	108227	627801	6/28/2005	METAL	Lead	mg/Kg	0.077	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/BR01UDUP	108227	627801	6/28/2005	METAL	Zinc	mg/Kg	1.6	J	U*	Blank contamination. Disregarded as false positive.

Table 2
Data Qualification Summary

Sample ID	SDG	Lab Number	Date Sampled	Analysis	Parameter	Units	Result	Qualifier	Data Review Qualifier	Reason for Qualifier
BG-EC-01/LV01U	108227	627802	6/28/2005	METAL	Lead	mg/Kg	0.29		U*	Blank contamination. Disregarded as false positive.
BG-EC-01/LV01W	108227	627803	6/28/2005	METAL	Lead	mg/Kg	0.28		U*	Blank contamination. Disregarded as false positive.
BG-EC-01/RT01W	108227	627804	6/28/2005	METAL	Cadmium	mg/Kg	0.0096	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/RT01W	108227	627804	6/28/2005	METAL	Lead	mg/Kg	0.6		U*	Blank contamination. Disregarded as false positive.
OX-BB-S	108237	627864	6/16/2004	METAL	Cadmium	mg/Kg	0.4	J	U*	Blank contamination. Disregarded as false positive.
BG-EC-01/SS02	108237	627869	6/28/2005	METAL	Cadmium	mg/Kg	0.43	J	U*	Blank contamination. Disregarded as false positive.

% = Percent

J = Estimated value. Result is below the reporting limit.

J* = Qualified as estimated during the data review.

J- = Qualified as estimated during the data review due to potential low bias.

mg/kg = milligrams per kilogram

MS = Matrix Spike

R = Qualified as rejected during the data review.

RPD = Relative Percent Difference

SDG = Sample Delivery Group

TCLP = Toxicity Characteristic Leaching Procedure

U = Not Detected. Numerical value is the reporting limit.

U* = Not Detected. Disregarded as false positive due to blank contamination.

Table 3
Field Duplicate Results
BG-EC-01/BR01U and BG-EC-01/BR01UDUP

Sample ID:		BG-EC-01/BR01U		BG-EC-01/BR01UDUP		Meets Criteria?
Date Collected:		6/28/2005		6/28/2005		
Sample Delivery Group:		108227		108227		
Lab ID:		627800		627801		
Comments:		Berries-Unwashed		Berries-Unwashed		
Parameter	Units					
Metals						
Arsenic	mg/Kg	0.0083	U	0.0087	U	Yes
Cadmium	mg/Kg	0.0083	U	0.0087	U	Yes
Lead	mg/Kg	0.057	J U*	0.077	J U*	Yes
Zinc	mg/Kg	1.5	J U*	1.6	J U*	Yes
Physical Parameters						
Solids	%	12.3		13		Yes

% = Percent

J = Estimated value. Result is below the reporting limit.

mg/kg = milligrams per kilogram

U = Not detected. Numerical value is the reporting limit.

U* = Not detected. Disregarded as false positive due to blank contamination.

Table 4
Field Duplicate Results
EC-01/LV02U and EC-1000/LV02U

Sample ID:		EC-01/LV02U		EC-1000/LV02U		Meets Criteria?
Date Collected:		6/28/2005		6/28/2005		
Sample Delivery Group:		108227		108227		
Lab ID:		627794		627795		
Comments:		Leaves-Unwashed		Leaves-Unwashed		
Parameter	Units					
Metals						
Arsenic	mg/Kg	0.047	J U*	0.028	J U*	Yes
Cadmium	mg/Kg	0.036	J U*	0.035	J U*	Yes
Lead	mg/Kg	1.8	U*	0.91	U*	Yes
Zinc	mg/Kg	37.9		29.9		Yes
Physical Parameters						
Solids	%	45.8		45.7		Yes

% = Percent

J = Estimated value. Result is below the reporting limit.

mg/kg = milligrams per kilogram

U = Not detected. Numerical value is the reporting limit.

U* = Not detected. Disregarded as false positive due to blank contamination.

Table 5
Comparison of Initial and Reanalysis Data
EC-01/BR02U and EC-02/BR02U

Sample ID:		EC-01/BR02U		EC-01/BR02U	
Date Collected:		6/28/2005		6/28/2005	
Sample Delivery Group:		108227		108227A	
Lab ID:		627793		627793B	
Lab Notes:		Initial Analysis		Reanalysis	
Location:		B. Moore Property		B. Moore Property	
Comments:		Berries-Unwashed		Berries-Unwashed	
Parameter	Units				
Metals					
Arsenic	mg/Kg	0.029	J U*	0.0088	U
Cadmium	mg/Kg	0.0093	U	0.0088	U
Lead	mg/Kg	30	R	0.09	J
Zinc	ma/Kg	5.6		2.1	

Sample ID:		EC-02/BR02U	EC-02/BR02U
Date Collected:		6/28/2005	6/28/2005
Sample Delivery Group:		108227	108227A
Lab ID:		627788	627788B
Lab Notes:		Initial Analysis	Reanalysis
Location:		TFM Property	TFM Property
Comments:		Berries-Unwashed	Berries-Unwashed
Parameter	Units		
Metals			
Arsenic	mg/Kg	0.0093 U	0.011 J U*
Cadmium	mg/Kg	0.044 J U*	0.061 J U*
Lead	mg/Kg	0.9 U*	0.73
Zinc	mg/Kg	5.8	3.6

% = Percent

J = Estimated value. Result is below the reporting limit.

mg/kg = milligrams per kilogram

R = Rejected during data review.

U = Not detected. Numerical value is the reporting limit.

U* = Not detected. Disregarded as false positive due to blank contamination.

APPENDIX M
Field XRF Data

Field XRF Results

08/28/2005 Measurements

Operator: _____

XRF Analysis Worksheet

Date: _____

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
Standardization Total Counts 2026 Test Resolution 202 Peak Check Fe 327.4 Peak Check Mo 891.0 Successful Standardization, Resolution 199		Expected 2000 Expected 208 Factory Set 336 Factory Set 915									
Blank	SiO2	8/28/2006	Reading 1	<6	+/-	148 +/-	17	<8	+/-	<9	+/-
			Reading 2	<6	+/-	115 +/-	17	<8	+/-	<9	+/-
Cadmium in Blank?			Reading 3	<6	+/-	149 +/-	17	<8	+/-	<9	+/-
			Average		+/-	137 +/-	17		+/-		+/-
RTC 408	Standard	8/28/2006	Reading 1	432 +/-	15	533 +/-	21	425 +/-	13	<17	+/-
RTC 408	Standard	8/28/2006	Reading 2	434 +/-	15	530 +/-	21	426 +/-	13	21 +/-	6
RTC 408	Standard	8/28/2006	Reading 3	418 +/-	14	528 +/-	20	456 +/-	14	<16	+/-
			Average	428 +/-	15	530 +/-	21	436 +/-	13		+/-
OSL-103	8/22/2006	8/28/2006	Reading 1	<20	+/-	135 +/-	17	170 +/-	7	649 +/-	17
SS01	0-0.25 ft		Reading 2	<20	+/-	137 +/-	17	185 +/-	8	597 +/-	16
			Reading 3	<19	+/-	148 +/-	17	188 +/-	7	638 +/-	16
			Average		+/-	140 +/-	17	181 +/-	7	628 +/-	16
OSL-102	8/22/2006	8/28/2006	Reading 1	<29	+/-	133 +/-	18	404 +/-	11	456 +/-	14
SS01	0-0.25 ft		Reading 2	<28	+/-	149 +/-	18	386 +/-	11	361 +/-	13
			Reading 3	<26	+/-	119 +/-	17	334 +/-	10	408 +/-	13
			Average		+/-		+/-		+/-		+/-
OSL-102	8/22/2006	8/28/2006	Reading 1	<69	+/-	157 +/-	19	259 +/-	10	368 +/-	14
SS02	0.25-1 ft		Reading 2	<25	+/-	152 +/-	19	258 +/-	10	498 +/-	16
			Reading 3	<24	+/-	147 +/-	19	250 +/-	9	323 +/-	13
			Average		+/-	152 +/-	19	256 +/-	10	396 +/-	14
OSL-103	8/22/2006	8/28/2006	Reading 1	<24	+/-	139 +/-	19	253 +/-	9	1217 +/-	25
SS02	0.25-1 ft		Reading 2	25 +/-	8	173 +/-	19	210 +/-	9	3773 +/-	51
			Reading 3	<18	+/-	132 +/-	18	142 +/-	7	1272 +/-	25
			Average		+/-	148 +/-	19	202 +/-	8	2087 +/-	34
OSL-101	8/22/2006	8/28/2006	Reading 1	285 +/-	54	272 +/-	29	5845 +/-	93	53333 +/-	693
SS02	0.25-1 ft		Reading 2	399 +/-	58	212 +/-	27	7473 +/-	109	49395 +/-	617
			Reading 3	313 +/-	60	246 +/-	28	7154 +/-	110	60224 +/-	783
			Average		+/-	243 +/-	28	6824 +/-	104	54317 +/-	698

Operator: _____

XRF Analysis Worksheet

Date: _____

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
OSL-101	8/22/2006	8/28/2006	Reading 1	<137	+/-	271	+/- 23	6288	+/- 82	23358	+/- 266
SS01	0-0.25 ft		Reading 2	338	+/- 60	197	+/- 25	8301	+/- 117	39237	+/- 488
			Reading 3	277	+/- 59	207	+/- 25	8609	+/- 117	32516	+/- 398
			Average		+/-	225	+/- 24	7733	+/- 105	31704	+/- 384
OSL-100	8/22/2006	8/28/2006	Reading 1	<106	+/-	284	+/- 22	3966	+/- 55	18083	+/- 205
SS02	0.25-1 ft		Reading 2	<106	+/-	260	+/- 22	4180	+/- 57	15494	+/- 177
			Reading 3	<100	+/-	306	+/- 23	3523	+/- 51	19040	+/- 217
			Average		+/-	283	+/- 22	3890	+/- 54	17539	+/- 200
OSL-100	8/22/2006	8/28/2006	Reading 1	<61	+/-	281	+/- 20	1729	+/- 27	13648	+/- 138
SS01	0-0.25 ft		Reading 2	<55	+/-	250	+/- 18	1522	+/- 24	13565	+/- 134
			Reading 3	<55	+/-	255	+/- 19	1509	+/- 24	14972	+/- 147
			Average		+/-	262	+/- 19	1587	+/- 25	14062	+/- 140
NIST2710	Standard	8/28/2006	Reading 1	614	+/- 44	165	+/- 22	5342	+/- 71	6903	+/- 95
			Reading 2	545	+/- 43	153	+/- 22	5298	+/- 70	6860	+/- 94
Cd reading are do not match standard!			Reading 3	670	+/- 45	196	+/- 23	5501	+/- 74	7149	+/- 99
			Average	610	+/- 44	171	+/- 22	5380	+/- 72	6971	+/- 96
OSL-49E	8/24/2006	8/28/2006	Reading 1	<21	+/-	138	+/- 18	204	+/- 8	699	+/- 17
SS01	0-0.25 ft		Reading 2	<21	+/-	111	+/- 17	196	+/- 8	659	+/- 17
West			Reading 3	<20	+/-	107	+/- 17	187	+/- 8	637	+/- 16
			Average		+/-	119	+/- 17	196	+/- 8	665	+/- 17
OSL-49E	8/24/2006	8/28/2006	Reading 1	<11	+/-	131	+/- 18	38	+/- 4	203	+/- 10
SS02	0.25-1 ft		Reading 2	<11	+/-	130	+/- 18	31	+/- 4	193	+/- 9
West			Reading 3	<11	+/-	113	+/- 18	31	+/- 4	165	+/- 9
			Reading 4	<10	+/-	112	+/- 18	21	+/- 4	194	+/- 9
Precision Check with 7 Readings			Reading 5	<10	+/-	107	+/- 18	18	+/- 4	141	+/- 8
%RSD should be < 20%			Reading 6	<10	+/-	131	+/- 18	15	+/- 4	110	+/- 7
Problems with Lead & Zinc			Reading 7	<9	+/-	143	+/- 17	16	+/- 4	92	+/- 7
			Average		+/-	124	+/- 18	24	+/- 4	157	+/- 8
			Std Deviation		+/-	12	+/- 0	8	+/- 0	41	+/- 1
			RSD (%)		+/-	10%	+/- 2%	34%	+/- 0%	26%	+/- 12%

Operator: _____

XRF Analysis Worksheet

Date: _____

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
RTC-408	Standard	8/28/2006	Reading 1	434 +/-	14	512 +/-	20	410 +/-	13	18 +/-	6
			Reading 2	440 +/-	14	499 +/-	20	424 +/-	13	<16	+/-
			Reading 3	389 +/-	14	496 +/-	20	415 +/-	13	<16	+/-
			Reading 4	448 +/-	14	493 +/-	20	423 +/-	13	<16	+/-
			Average	428 +/-	14	500 +/-	20	418 +/-	13	18 +/-	6
Blank	SiO2	8/28/2006	Reading 1	<6 +/-		129 +/-	17	<8 +/-		<8 +/-	
			Reading 2	<6 +/-		110 +/-	16	<8 +/-		<9 +/-	
Cadmium in Blank?			Reading 3	<6 +/-		151 +/-	17	<8 +/-		<10 +/-	
			Average	+/-		130 +/-	17	#DIV/0! +/-	#DIV/0!	#DIV/0! +/-	#DIV/0!
NIST 2710	Standard	8/28/2006	Reading 1	516 +/-	14	150 +/-	23	5587 +/-	74	7032 +/-	96
			Reading 2	564 +/-	43	153 +/-	22	5409 +/-	70	7005 +/-	94
Cd reading are do not match standard!			Reading 3	727 +/-	46	105 +/-	23	5505 +/-	74	7284 +/-	101
			Average	602 +/-	34	136 +/-	23	5500 +/-	73	7107 +/-	97
Standardization Total Counts 2026 Test Resolution 201 Peak Check Fe 326.9 Peak Check Mo 890.9			Expected 2000 Expected 208 Factory Set 336 Factory Set 915								
Sucessful Standardization, Resolution 198											
Blank	SiO2	8/28/2006	Reading 1	<6 +/-		103 +/-	17	<7 +/-		<10 +/-	
			Reading 2	+/-		+/-		+/-		+/-	
			Reading 3	+/-		+/-		+/-		+/-	
			Average	+/-		+/-	17	+/-		+/-	

Cadmium reading appear incorrect for blank, field samples, and high calibration standard (NIST 2710)

Field XRF Results

8/30/2005 Measurements

XRF Analysis Worksheet

				Arsenic		Cadmium		Lead		Zinc	
Sample Name	Date Collected	Date Analyzed		Result	Error	Result	Error	Result	Error	Result	Error
Energy Calibration Check		8/30/2005		Instrument Reported a Satisfactory Result.							
SIO2 Blank		8/30/2005	Reading 1	<6	+/-	<47	+/-	<8	+/-	<11	+/-
NIST 2711 Med		8/30/2005	Reading 1	95	+/- 15	70	+/- 19	1177	+/- 21	314	+/- 13
			QC Limits	84	- 126	33	- 50	930	- 1394	280	- 420
OSL-03	8/25/2005	8/30/2005	Reading 1	<12	+/-	<48	+/-	84	+/- 5	179	+/- 8
			Reading 2	<12	+/-	58	+/- 17	74	+/- 5	158	+/- 8
			Reading 3	<12	+/-	<48	+/-	97	+/- 5	109	+/- 7
			Average	<12	+/-	58	+/- 17	85	+/- 5	149	+/- 8
OSL-33	8/25/2005	8/30/2005	Reading 1	<18	+/-	<53	+/-	181	+/- 8	942	+/- 20
			Reading 2	<21	+/-	59	+/- 19	220	+/- 9	961	+/- 21
			Reading 3	<20	+/-	<56	+/-	224	+/- 9	1065	+/- 23
			Average	<20	+/-	59	+/- 19	208	+/- 9	989	+/- 21
OSL-35	8/24/2005	8/30/2005	Reading 1	<17	+/-	<48	+/-	203	+/- 7	1048	+/- 19
			Reading 2	<14	+/-	<49	+/-	114	+/- 6	705	+/- 16
			Reading 3	<15	+/-	<49	+/-	147	+/- 7	736	+/- 17
			Average	<15	+/-	<49	+/-	155	+/- 7	830	+/- 17
OSL-08	8/25/2005	8/30/2005	Reading 1	<13	+/-	<51	+/-	88	+/- 6	239	+/- 10
			Reading 2	<10	+/-	<48	+/-	60	+/- 5	198	+/- 9
			Reading 3	<11	+/-	58	+/- 16	69	+/- 5	203	+/- 9
			Average	<11	+/-	58	+/- 16	72	+/- 5	213	+/- 9
OSL-07	8/25/2005	8/30/2005	Reading 1	<10	+/-	<48	+/-	47	+/- 4	210	+/- 9
			Reading 2	13	+/- 4	<51	+/-	68	+/- 5	259	+/- 11
			Reading 3	<11	+/-	<48	+/-	57	+/- 5	243	+/- 9
			Average	13	+/- 4	<49	+/-	57	+/- 5	237	+/- 10
OSL-58	8/27/2005	8/30/2005	Reading 1	19	+/- 4	<53	+/-	64	+/- 5	130	+/- 8
			Reading 2	32	+/- 5	67	+/- 18	73	+/- 6	135	+/- 8
			Reading 3	30	+/- 5	57	+/- 18	74	+/- 6	160	+/- 9
			Average	27	+/- 5	62	+/- 18	70	+/- 6	142	+/- 8
OSL-57	8/27/2005	8/30/2005	Reading 1	19	+/- 5	<58	+/-	57	+/- 6	125	+/- 9
			Reading 2	20	+/- 5	<53	+/-	69	+/- 5	164	+/- 9
			Reading 3	24	+/- 5	<51	+/-	95	+/- 6	187	+/- 9
			Average	21	+/- 5	<54	+/-	74	+/- 6	159	+/- 9

Operator: _M. Hildebrandt_

XRF Analysis Worksheet

Date:_08/30/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
OSL-14	8/26/2005	8/30/2005	Reading 1	15 +/- 4		<51 +/-		45 +/- 4		154 +/- 8	
			Reading 2	<11 +/-		<50 +/-		56 +/- 5		148 +/- 8	
			Reading 3	<11 +/-		<51 +/-		56 +/- 5		175 +/- 9	
			Average	15 +/- 4		<51 +/-		52 +/- 5		159 +/- 8	
OSL-53	8/28/2005	8/30/2005	Reading 1	<9 +/-		<50 +/-		24 +/- 4		73 +/- 6	
			Reading 2	10 +/- 3		<48 +/-		17 +/- 4		52 +/- 5	
			Reading 3	<9 +/-		<50 +/-		21 +/- 4		66 +/- 6	
			Average	10 +/- 3		<49 +/-		21 +/- 4		64 +/- 6	
OSL-12	8/29/2005	8/30/2005	Reading 1	57 +/- 10		<51 +/-		599 +/- 12		810 +/- 17	
			Reading 2	<18 +/-		<50 +/-		221 +/- 8		576 +/- 14	
			Reading 3	<23 +/-		85 +/- 17		387 +/- 10		623 +/- 15	
			Average	57 +/- 10		85 +/- 17		402 +/- 10		670 +/- 15	
OSL-25	8/29/2005	8/30/2005	Reading 1	<12 +/-		<50 +/-		78 +/- 5		209 +/- 9	
			Reading 2	<12 +/-		<48 +/-		78 +/- 5		250 +/- 9	
			Reading 3	<11 +/-		50 +/- 15		79 +/- 5		225 +/- 9	
			Average	<12 +/-		50 +/- 15		78 +/- 5		228 +/- 9	
OSL-46	8/29/2005	8/30/2005	Reading 1	<17 +/-		<49 +/-		184 +/- 7		511 +/- 14	
			Reading 2	<17 +/-		<50 +/-		193 +/- 7		529 +/- 14	
			Reading 3	33 +/- 6		52 +/- 17		201 +/- 7		519 +/- 14	
			Average	33 +/- 6		52 +/- 17		193 +/- 7		520 +/- 14	
OSL-78	8/29/2005	8/30/2005	Reading 1	<11 +/-		<54 +/-		34 +/- 5		94 +/- 7	
			Reading 2	<11 +/-		<52 +/-		36 +/- 5		91 +/- 7	
			Reading 3	<13 +/-		<55 +/-		59 +/- 5		127 +/- 9	
			Average	<12 +/-		<54 +/-		43 +/- 5		104 +/- 8	
SIO2 Blank		8/30/2005	Reading 1	<6 +/-		<45 +/-		<8 +/-		<11 +/-	
NIST 2709 Low		8/30/2005	Reading 1	<11 +/-		<54 +/-		16 +/- 4		82 +/- 7	
			QC Limits	14 - 21		0.3 - 0.5		15 - 23		85 - 127	
OSL-47	8/29/2005	8/30/2005	Reading 1	21 +/- 6		<54 +/-		189 +/- 8		705 +/- 17	
			Reading 2	18 +/- 5		<53 +/-		99 +/- 6		549 +/- 15	
			Reading 3	<20 +/-		<55 +/-		226 +/- 9		587 +/- 16	
			Average	20 +/- 6		<54 +/-		171 +/- 8		614 +/- 16	

Operator: _M. Hildebrandt_

XRF Analysis Worksheet

Date: _08/30/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
TSL-05	8/29/2005	8/30/2005	Reading 1	<16	+/-	<48	+/-	209	+/- 7	554	+/- 14
			Reading 2	<19	+/-	52	+/- 16	265	+/- 8	538	+/- 13
			Reading 3	<17	+/-	<47	+/-	212	+/- 7	578	+/- 14
			Average	<17	+/-	52	+/- 16	229	+/- 7	557	+/- 14
OSL-41	8/29/2005	8/30/2005	Reading 1	30	+/- 7	<52	+/-	222	+/- 8	847	+/- 19
			Reading 2	24	+/- 6	<53	+/-	186	+/- 7	700	+/- 17
			Reading 3	30	+/- 7	<54	+/-	279	+/- 9	2355	+/- 34
			Average	28	+/- 7	<53	+/-	229	+/- 8	1301	+/- 23
OSL-68	8/29/2005	8/30/2005	Reading 1	<15	+/-	<50	+/-	123	+/- 6	177	+/- 9
			Reading 2	24	+/- 6	<53	+/-	135	+/- 7	183	+/- 9
			Reading 3	<18	+/-	<57	+/-	150	+/- 8	148	+/- 9
			Average	24	+/- 6	<53	+/-	136	+/- 7	169	+/- 9
OSL-69	8/29/2005	8/30/2005	Reading 1	<15	+/-	<49	+/-	159	+/- 7	456	+/- 13
			Reading 2	<15	+/-	51	+/- 16	134	+/- 6	451	+/- 13
			Reading 3	<14	+/-	62	+/- 16	139	+/- 6	487	+/- 13
			Average	<15	+/-	57	+/- 16	144	+/- 6	465	+/- 13
OSL-40	8/29/2005	8/30/2005	Reading 1	25	+/- 8	<50	+/-	348	+/- 10	1580	+/- 25
Clumps			Reading 2	82	+/- 11	<52	+/-	656	+/- 14	2310	+/- 34
			Reading 3	58	+/- 12	58	+/- 17	905	+/- 16	3242	+/- 40
			Average	55	+/- 10	58	+/- 17	636	+/- 13	2377	+/- 33
OSL-34	8/26/2005	8/30/2005	Reading 1	<11	+/-	<50	+/-	52	+/- 5	402	+/- 12
			Reading 2	<12	+/-	82	+/- 17	73	+/- 5	475	+/- 13
			Reading 3	<12	+/-	<50	+/-	65	+/- 5	419	+/- 12
			Average	<12	+/-	82	+/- 17	63	+/- 5	432	+/- 12
TRB-10	8/29/2005	8/30/2005	Reading 1	<25	+/-	<48	+/-	485	+/- 11	1318	+/- 22
			Reading 2	29	+/- 8	<48	+/-	481	+/- 11	1419	+/- 23
			Reading 3	<38	+/-	60	+/- 17	1125	+/- 18	2247	+/- 31
			Average	29	+/- 8	60	+/- 17	697	+/- 13	1661	+/- 25

Operator: _M. Hildebrandt_

XRF Analysis Worksheet

Date: _08/30/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
OSL-21	8/26/2005	8/30/2005	Reading 1	<12 +/-		<49 +/-		73 +/- 5		243 +/- 10	
Sample also used as Precision Check			Reading 2	<12 +/-		<49 +/-		74 +/- 5		221 +/- 9	
			Reading 3	<12 +/-		<49 +/-		82 +/- 5		222 +/- 9	
			Reading 4	<12 +/-		<49 +/-		74 +/- 5		229 +/- 9	
			Reading 5	<12 +/-		<49 +/-		82 +/- 5		234 +/- 9	
			Reading 6	<12 +/-		<49 +/-		71 +/- 5		223 +/- 9	
			Reading 7	<12 +/-		<49 +/-		92 +/- 5		227 +/- 9	
			Reading 8	<12 +/-		<49 +/-		80 +/- 5		227 +/- 9	
			Reading 9	<12 +/-		60 +/- 16		84 +/- 5		225 +/- 9	
			Reading 10	<12 +/-		<48 +/-		86 +/- 5		242 +/- 9	
			Average	<12 +/-		60 +/- 16		80 +/- 5		229 +/- 9	
			Std Dev	NA +/-		NA +/-		7 +/- 0.0		8 +/- 0.3	
			Rel Std Dev	NA +/-		NA +/-		8.4% +/- 0.0%		3.4% +/- 3.3%	
			RSD Limit					< 20%		< 20%	
SIO2 Blank		8/20/2005	Reading 1	<6 +/-		<45 +/-		<9 +/-		<10 +/-	
NIST 2711 Med		8/30/2005	Reading 1	120 +/- 14		<56 +/-		1100 +/- 19		327 +/- 13	
			QC Limits	84 - 126		33 - 50		930 - 1394		280 - 420	

Field XRF Results

9/1/2005

Operator: _S. Shelton_

XRF Analysis Worksheet

Date: _09/01/2005_

				Arsenic		Cadmium		Lead		Zinc	
Sample Name	Date Collected	Date Analyzed		Result	Error	Result	Error	Result	Error	Result	Error
Energy Calibration Check		9/1/2005		Sucessful standardization.		Resolution 219					
SIO2 Blank		9/1/2005	Reading 1	<6	+/-	<48	+/-	<9	+/-	<10	+/-
NIST 2709 Low		9/1/2005	Reading 1	17	+/- 4	<54	+/-	21	+/- 4	90	+/- 7
			QC Limits	14	- 21	0.3	- 0.5	15	- 23	85	- 127
OSL-66	8/31/2005	9/1/2005	Reading 1	<10	+/-	<48	+/-	35	+/- 4	138	+/- 7
			Reading 2	22	+/- 4	<51	+/-	41	+/- 5	113	+/- 7
			Reading 3	<11	+/-	<51	+/-	35	+/- 5	107	+/- 8
			Average	22	+/- 4	<50	+/-	37	+/- 5	119	+/- 7
OSL-49	8/31/2005	9/1/2005	Reading 1	<19	+/-	<45	+/-	322	+/- 8	604	+/- 14
			Reading 2	20	+/- 6	<44	+/-	276	+/- 8	472	+/- 12
			Reading 3	<22	+/-	52	+/- 16	367	+/- 9	880	+/- 17
			Average	20	+/-	52	+/- 16	322	+/- 8	652	+/- 14
OSL-99	8/31/2005	9/1/2005	Reading 1	<11	+/-	<46	+/-	77	+/- 5	356	+/- 11
			Reading 2	<12	+/-	<48	+/-	89	+/- 5	335	+/- 11
			Reading 3	<12	+/-	<47	+/-	98	+/- 5	363	+/- 11
			Average	<12	+/-	<47	+/-	88	+/- 5	351	+/- 11
OSL-17	8/31/2005	9/1/2005	Reading 1	<12	+/-	<48	+/-	73	+/- 5	282	+/- 10
			Reading 2	<12	+/-	<48	+/-	78	+/- 5	300	+/- 10
			Reading 3	<12	+/-	<49	+/-	84	+/- 5	331	+/- 11
			Average	<12	+/-	<48	+/-	78	+/- 5	304	+/- 10
OSL-31	8/31/2005	9/1/2005	Reading 1	<16	+/-	<48	+/-	171	+/- 7	762	+/- 16
			Reading 2	<18	+/-	<50	+/-	227	+/- 8	894	+/- 18
			Reading 3	<19	+/-	<49	+/-	224	+/- 8	960	+/- 19
			Average	<18	+/-	<49	+/-	207	+/- 8	872	+/- 18
OSL-65	8/31/2005	9/1/2005	Reading 1	20	+/- 4	<54	+/-	45	+/- 5	126	+/- 8
			Reading 2	<12	+/-	<55	+/-	41	+/- 5	128	+/- 8
			Reading 3	15	+/- 4	<54	+/-	47	+/- 5	143	+/- 9
			Average	18	+/- 4	<54	+/-	44	+/- 5	132	+/- 8
BG-OSL-01	8/31/2005	9/1/2005	Reading 1	<9	+/-	<51	+/-	22	+/- 4	60	+/- 6
			Reading 2	<10	+/-	<49	+/-	36	+/- 4	77	+/- 6
			Reading 3	<10	+/-	52	+/- 17	37	+/- 4	85	+/- 7
			Average	<10	+/-	52	+/- 17	32	+/- 4	74	+/- 6

Operator: _S. Shelton_

XRF Analysis Worksheet

Date: _09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
OSL-55	8/31/2005	9/1/2005	Reading 1	18 +/- 3		<54 +/-		16 +/- 4		102 +/- 8	
			Reading 2	12 +/- 3		<50 +/-		32 +/- 4		124 +/- 8	
			Reading 3	22 +/- 4		<54 +/-		31 +/- 5		118 +/- 8	
			Average	17 +/- 3		<53 +/-		26 +/- 4		115 +/- 8	
OSL-64	8/31/2005	9/2/2005	Reading 1	22 +/- 4		68 +/- 18		40 +/- 5		140 +/- 8	
			Reading 2	24 +/- 4		60 +/- 18		56 +/- 5		149 +/- 9	
			Reading 3	17 +/- 4		<55 +/-		40 +/- 5		156 +/- 9	
			Average	21 +/- 4		64 +/- 18		45 +/- 5		148 +/- 9	
OSL-67	8/31/2005	9/1/2005	Reading 1	15 +/- 3		<48 +/-		30 +/- 4		80 +/- 6	
Clumps			Reading 2	<9 +/-		<50 +/-		28 +/- 4		82 +/- 6	
			Reading 3	<9 +/-		<53 +/-		12 +/- 4		69 +/- 7	
			Average	15 +/- 3		<50 +/-		23 +/- 4		77 +/- 6	
OSL-54	8/31/2005	9/1/2005	Reading 1	16 +/- 4		<54 +/-		38 +/- 5		113 +/- 8	
			Reading 2	<11 +/-		<53 +/-		38 +/- 5		106 +/- 8	
			Reading 3	17 +/- 4		<50 +/-		42 +/- 5		84 +/- 7	
			Average	17 +/- 4		<52 +/-		39 +/- 5		101 +/- 8	
OSL-63	8/31/2005	9/1/2005	Reading 1	19 +/- 4		<53 +/-		56 +/- 5		283 +/- 11	
			Reading 2	23 +/- 4		<51 +/-		59 +/- 5		276 +/- 11	
			Reading 3	14 +/- 4		58 +/- 18		76 +/- 5		306 +/- 11	
			Average	19 +/- 4		58 +/- 18		64 +/- 5		288 +/- 11	
OSL-39	8/31/2005	9/1/2005	Reading 1	<25 +/-		53 +/- 17		491 +/- 11		1998 +/- 29	
			Reading 2	<18 +/-		54 +/- 17		229 +/- 8		1553 +/- 25	
			Reading 3	<30 +/-		71 +/- 17		705 +/- 13		2335 +/- 32	
			Average	<24 +/-		59 +/- 17		475 +/- 11		1962 +/- 29	
OSL-38	8/31/2005	9/1/2005	Reading 1	<14 +/-		<49 +/-		112 +/- 6		481 +/- 13	
			Reading 2	<14 +/-		<50 +/-		109 +/- 6		480 +/- 13	
			Reading 3	<14 +/-		<51 +/-		113 +/- 6		461 +/- 13	
			Average	<14 +/-		<50 +/-		111 +/- 6		474 +/- 13	
TSL-07	8/31/2005	9/1/2005	Reading 1	15 +/- 5		<47 +/-		125 +/- 6		267 +/- 10	
			Reading 2	<14 +/-		55 +/- 16		128 +/- 6		278 +/- 10	
			Reading 3	<13 +/-		<48 +/-		112 +/- 6		249 +/- 9	
			Average	15 +/- 5		55 +/- 16		122 +/- 6		265 +/- 10	

Operator: _S. Shelton_

XRF Analysis Worksheet

Date: _09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
TSL-06	8/31/2005	9/1/2005	Reading 1	16	+/- 5	60	+/- 16	167	+/- 7	531	+/- 13
			Reading 2	<15	+/-	<48	+/-	171	+/- 7	501	+/- 13
			Reading 3	<14	+/-	<47	+/-	144	+/- 6	493	+/- 13
			Average	16	+/- 5	60	+/- 16	161	+/- 7	508	+/- 13
OSL-56	8/31/2005	9/1/2005	Reading 1	<10	+/-	<52	+/-	21	+/- 4	95	+/- 7
			Reading 2	21	+/- 4	<53	+/-	24	+/- 4	93	+/- 7
			Reading 3	<11	+/-	<53	+/-	31	+/- 4	79	+/- 7
			Average	21	+/- 4	<53	+/-	25	+/- 4	89	+/- 7
OSL-37	8/31/2005	9/1/2005	Reading 1	<15	+/-	<50	+/-	147	+/- 6	518	+/- 14
			Reading 2	20	+/- 5	<51	+/-	113	+/- 6	462	+/- 13
			Reading 3	<13	+/-	63	+/- 16	110	+/- 6	439	+/- 12
			Average	20	+/- 5	63	+/- 16	123	+/- 6	473	+/- 13
OSL-36	8/31/2005	9/1/2005	Reading 1	<15	+/-	<79	+/-	<20	+/-	145	+/- 13
Crumbly			Reading 2	<16	+/-	<82	+/-	<21	+/-	146	+/- 14
Rocky			Reading 3	<15	+/-	<83	+/-	<20	+/-	123	+/- 13
			Average	<15	+/-	<81	+/-	<20	+/-	138	+/- 13
OSL-50	8/31/2005	9/1/2005	Reading 1	<9	+/-	<48	+/-	35	+/- 4	97	+/- 6
Sample also used as Precision Check			Reading 2	<9	+/-	56	+/- 16	34	+/- 4	103	+/- 7
			Reading 3	<9	+/-	<49	+/-	30	+/- 4	89	+/- 6
			Reading 4	<9	+/-	<49	+/-	26	+/- 4	96	+/- 7
			Reading 5	<9	+/-	<49	+/-	29	+/- 4	113	+/- 7
			Reading 6	13	+/- 3	<48	+/-	20	+/- 4	94	+/- 6
			Reading 7	<9	+/-	<47	+/-	26	+/- 4	110	+/- 7
			Reading 8	<9	+/-	<48	+/-	29	+/- 4	75	+/- 6
			Reading 9	<9	+/-	<48	+/-	28	+/- 4	102	+/- 7
			Reading 10	<10	+/-	51	+/- 16	34	+/- 4	111	+/- 7
			Average	13	+/- 3	54	+/- 16	29	+/- 4	99	+/- 7
			Std Dev	NA	+/-	NA	+/-	5	+/- 0.0	12	+/- 0.5
			Rel Std Dev	NA	+/-	NA	+/-	15.7%	+/- 0.0%	11.7%	+/- 7.4%
			RSD Limit					< 20%		< 20%	
SIO2 Blank		9/1/2005	Reading 1	<6	+/-	<46	+/-	<9	+/-	<10	+/-

Operator: _S. Shelton_

XRF Analysis Worksheet

Date:_09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
NIST 2711 Med		9/1/2005	Reading 1	104	+/- 15	<57	+/-	1169	+/- 20	345	+/- 13
			QC Limits	84	- 126	33	- 50	930	- 1394	280	- 420
Energy Calibration Check		9/1/2005		Sucessful standardization. Resolution 219. Restandardized since changed battery.							
OSL-48	8/31/2005	9/1//2005	Reading 1	<9	+/-	<51	+/-	25	+/- 4	60	+/- 6
			Reading 2	<9	+/-	68	+/- 17	23	+/- 4	61	+/- 6
			Reading 3	<8	+/-	<50	+/-	18	+/- 4	54	+/- 6
			Average	<9	+/-	68	+/- 17	22	+/- 4	58	+/- 6
NIST 2709 Low		9/1/2005	Reading 1	24	+/- 4	<54	+/-	<12	+/-	102	+/- 8
			Reading 2	15	+/- 4	<54	+/-	18	+/- 4	95	+/- 8
			QC Limits	14	- 21	0.3	- 0.5	15	- 23	85	- 127
TRB-01	8/31/2005	9/1/2005	Reading 1	<12	+/-	<48	+/-	86	+/- 5	285	+/- 10
			Reading 2	<12	+/-	<47	+/-	85	+/- 5	277	+/- 10
			Reading 3	<11	+/-	48	+/- 16	70	+/- 5	269	+/- 10
			Average	<12	+/-	48	+/- 16	80	+/- 5	277	+/- 10
OSL-36	8/31/2005	9/1/2005	Reading 1	<15	+/-	<48	+/-	145	+/- 6	804	+/- 17
			Reading 2	<15	+/-	54	+/- 16	153	+/- 6	615	+/- 15
			Reading 3	<21	+/-	56	+/- 17	345	+/- 9	721	+/- 16
			Average	<17	+/-	55	+/- 17	214	+/- 7	713	+/- 16
OSL-95	8/30/2005	9/1/2005	Reading 1	<8	+/-	52	+/- 17	<10	+/-	31	+/- 5
			Reading 2	<8	+/-	<50	+/-	<10	+/-	29	+/- 5
			Reading 3	<8	+/-	<50	+/-	<10	+/-	27	+/- 5
			Average	<8	+/-	52	+/- 17	<10	+/-	29	+/- 5
OSL-02	8/30/2005	9/1/2005	Reading 1	<9	+/-	<46	+/-	30	+/- 4	103	+/- 7
			Reading 2	<9	+/-	53	+/- 16	32	+/- 4	110	+/- 7
			Reading 3	<9	+/-	54	+/- 15	28	+/- 4	144	+/- 7
			Average	<9	+/-	54	+/- 16	30	+/- 4	119	+/- 7
TRB-09	8/30/2005	9/1/2005	Reading 1	410	+/- 49	111	+/- 24	8302	+/- 101	34989	+/- 376
Driveway			Reading 2	446	+/- 41	96	+/- 23	5634	+/- 74	54412	+/- 569
Rocky			Reading 3	426	+/- 22	<64	+/-	3613	+/- 50	21930	+/- 233
			Average	427	+/- 37	104	+/- 24	5850	+/- 75	37110	+/- 393

Operator: _S. Shelton_

XRF Analysis Worksheet

Date:_09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
TSL-02	8/30/2005	9/1/2005	Reading 1	<12	+/-	51	+/- 16	74	+/- 5	154	+/- 8
			Reading 2	<12	+/-	77	+/- 17	63	+/- 5	178	+/- 9
			Reading 3	12	+/- 4	59	+/- 17	51	+/- 5	186	+/- 9
			Average	12	+/- 4	62	+/- 17	63	+/- 5	173	+/- 9
TSL-01	8/30/2005	9/1/2005	Reading 1	<9	+/-	<48	+/-	28	+/- 4	85	+/- 6
			Reading 2	<9	+/-	<47	+/-	21	+/- 4	71	+/- 6
			Reading 3	<9	+/-	<49	+/-	28	+/- 4	116	+/- 7
			Average	<9	+/-	<48	+/-	26	+/- 4	91	+/- 6
OSL-01	8/30/2005	9/1/2005	Reading 1	<9	+/-	<48	+/-	26	+/- 4	61	+/- 6
			Reading 2	<8	+/-	68	+/- 15	16	+/- 3	67	+/- 6
			Reading 3	<8	+/-	<47	+/-	18	+/- 4	74	+/- 6
			Average	<8	+/-	68	+/- 15	20	+/- 4	67	+/- 6
TRB-08	8/30/2005	9/1/2005	Reading 1	<19	+/-	<50	+/-	240	+/- 8	943	+/- 19
			Reading 2	<22	+/-	<49	+/-	339	+/- 9	1403	+/- 23
			Reading 3	28	+/- 8	64	+/- 18	314	+/- 10	1439	+/- 26
			Average	28	+/- 8	64	+/- 18	298	+/- 9	1262	+/- 23
TRB-09	8/30/2005	9/1/2005	Reading 1	<22	+/-	<48	+/-	378	+/- 10	1164	+/- 21
			Reading 2	<20	+/-	<47	+/-	309	+/- 9	1114	+/- 20
			Reading 3	<21	+/-	<51	+/-	276	+/- 9	1220	+/- 23
			Average	<21	+/-	<49	+/-	321	+/- 9	1166	+/- 21
OSL-61	8/30/2005	9/1/2005	Reading 1	<13	+/-	<54	+/-	76	+/- 6	120	+/- 8
			Reading 2	<13	+/-	<55	+/-	57	+/- 5	125	+/- 8
			Reading 3	<13	+/-	83	+/- 19	65	+/- 6	222	+/- 11
			Average	<13	+/-	83	+/- 19	66	+/- 6	156	+/- 9
NIST 2711 Med		9/1/2005	Reading 1	93	+/- 15	80	+/- 19	1173	+/- 20	329	+/- 13
			QC Limits	84	- 126	33	- 50	930	- 1394	280	- 420
SIO2 Blank		8/20/2005	Reading 1	<6	+/-	<45	+/-	<8	+/-	<10	+/-

Field XRF Results

9/2/2005

Operator: _S. Shelton_

XRF Analysis Worksheet

Date:_09/01/2005_

				Arsenic		Cadmium		Lead		Zinc	
Sample Name	Date Collected	Date Analyzed		Result	Error	Result	Error	Result	Error	Result	Error
Energy Calibration Check		9/2/2005		Sucessful standardization.		Resolution 219					
SIO2 Blank		9/2/2005	Reading 1	<6 +/-		<45 +/-		<8 +/-		<10 +/-	
NIST 2711 Med		9/2/2005	Reading 1	92 +/- 15		<57 +/-		1147 +/- 20		353 +/- 13	
			QC Limits	84 - 126		33 - 50		930 - 1394		280 - 420	
TRB-04	8/30/2005	9/2/2005	Reading 1	<15 +/-		48 +/- 16		141 +/- 6		512 +/- 13	
			Reading 2	<15 +/-		<48 +/-		178 +/- 7		551 +/- 14	
			Reading 3	<15 +/-		55 +/- 16		145 +/- 6		506 +/- 13	
			Average	<15 +/-		52 +/- 16		155 +/- 6		523 +/- 13	
OSL-98	8/30/2005	9/2/2005	Reading 1	16 +/- 3		<48 +/-		26 +/- 4		106 +/- 7	
			Reading 2	10 +/- 3		<48 +/-		24 +/- 4		63 +/- 6	
			Reading 3	<10 +/-		<49 +/-		30 +/- 4		93 +/- 7	
			Average	13 +/- 3		<48 +/-		27 +/- 4		87 +/- 7	
OSL-94	8/30/2005	9/2/2005	Reading 1	<20 +/-		<68 +/-		133 +/- 9		572 +/- 20	
Driveway			Reading 2	<18 +/-		<74 +/-		61 +/- 8		214 +/- 8	
Rocky			Reading 3	<14 +/-		<73 +/-		<18 +/-		118 +/- 11	
			Average	<17 +/-		<72 +/-		97 +/- 9		301 +/- 13	
OSL-94	8/30/2005	9/2/2005	Reading 1	<15 +/-		53 +/- 16		161 +/- 7		551 +/- 14	
			Reading 2	<16 +/-		<48 +/-		171 +/- 7		565 +/- 14	
			Reading 3	<15 +/-		<49 +/-		164 +/- 7		571 +/- 14	
			Average	<15 +/-		53 +/- 16		165 +/- 7		562 +/- 14	
OSL-59	8/30/2005	9/2/2005	Reading 1	14 +/- 4		<51 +/-		45 +/- 5		81 +/- 7	
			Reading 2	17 +/- 4		<52 +/-		59 +/- 5		139 +/- 8	
			Reading 3	19 +/- 4		<52 +/-		68 +/- 5		146 +/- 8	
			Average	17 +/- 4		<52 +/-		57 +/- 5		122 +/- 8	
OSL-73	8/30/2005	9/2/2005	Reading 1	18 +/- 4		<49 +/-		82 +/- 5		255 +/- 10	
			Reading 2	25 +/- 4		<49 +/-		83 +/- 5		262 +/- 10	
			Reading 3	20 +/- 4		<49 +/-		87 +/- 5		271 +/- 10	
			Average	21 +/- 4		<49 +/-		84 +/- 5		263 +/- 10	
OSL-29	8/30/2005	9/2/2005	Reading 1	<10 +/-		<49 +/-		49 +/- 5		179 +/- 8	
			Reading 2	<10 +/-		<48 +/-		51 +/- 4		210 +/- 9	
			Reading 3	<11 +/-		<49 +/-		49 +/- 4		205 +/- 9	
			Average	<10 +/-		<49 +/-		50 +/- 4		198 +/- 9	

Operator: _S. Shelton_

XRF Analysis Worksheet

Date: _09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
TSL-04	8/30/2005	9/2/2005	Reading 1	13 +/-	4	<48 +/-		80 +/-	5	337 +/-	11
			Reading 2	<12 +/-		<47 +/-		93 +/-	5	271 +/-	10
			Reading 3	<13 +/-		<48 +/-		109 +/-	6	342 +/-	11
			Average	13 +/-	4	<48 +/-		94 +/-	5	317 +/-	11
OSL-04	8/30/2005	9/2/2005	Reading 1	<10 +/-		<49 +/-		39 +/-	4	182 +/-	8
			Reading 2	<9 +/-		<50 +/-		32 +/-	4	115 +/-	7
			Reading 3	<10 +/-		<49 +/-		49 +/-	4	155 +/-	8
			Average	<10 +/-		<49 +/-		40 +/-	4	151 +/-	8
OSL-27	8/30/2005	9/2/2005	Reading 1	60 +/-	9	<52 +/-		403 +/-	11	1494 +/-	26
			Reading 2	<25 +/-		50 +/-	16	470 +/-	11	1569 +/-	25
			Reading 3	29 +/-	6	74 +/-	17	246 +/-	8	1134 +/-	21
			Average	45 +/-	8	62 +/-	17	373 +/-	10	1399 +/-	24
OSL-06	8/30/2005	9/2/2005	Reading 1	<8 +/-		<50 +/-		<10 +/-		18 +/-	5
			Reading 2	<8 +/-		<49 +/-		12 +/-	3	25 +/-	5
			Reading 3	<8 +/-		<49 +/-		<10 +/-		22 +/-	5
			Average	<8 +/-		<49 +/-		12 +/-	3	22 +/-	5
TSL-03	8/30/2005	9/2/2005	Reading 1	25 +/-	6	<50 +/-		195 +/-	7	802 +/-	17
			Reading 2	<16 +/-		<50 +/-		161 +/-	7	807 +/-	18
			Reading 3	<16 +/-		<48 +/-		181 +/-	7	830 +/-	17
			Average	25 +/-	6	<49 +/-		179 +/-	7	813 +/-	17
OSL-96	8/30/2005	9/2/2005	Reading 1	<16 +/-		70 +/-	17	152 +/-	7	412 +/-	12
			Reading 2	<17 +/-		<50 +/-		194 +/-	7	616 +/-	15
			Reading 3	<15 +/-		51 +/-	16	141 +/-	6	428 +/-	13
			Average	<16 +/-		61 +/-	17	162 +/-	7	485 +/-	13
OSL-97a	8/30/2005	9/2/2005	Reading 1	<13 +/-		<45 +/-		123 +/-	6	260 +/-	9
			Reading 2	<15 +/-		59 +/-	16	148 +/-	6	299 +/-	10
			Reading 3	<14 +/-		<46 +/-		140 +/-	6	309 +/-	10
			Average	<14 +/-		59 +/-	16	137 +/-	6	289 +/-	10
OSL-97b	8/30/2005	9/2/2005	Reading 1	<19 +/-		<50 +/-		240 +/-	8	364 +/-	12
			Reading 2	<19 +/-		<49 +/-		282 +/-	8	341 +/-	11
			Reading 3	<18 +/-		<47 +/-		224 +/-	7	474 +/-	13
			Average	<19 +/-		<49 +/-		249 +/-	8	393 +/-	12

Operator: _S. Shelton_

XRF Analysis Worksheet

Date: _09/01/2005_

Sample Name	Date Collected	Date Analyzed		Arsenic		Cadmium		Lead		Zinc	
				Result	Error	Result	Error	Result	Error	Result	Error
OSL-73	8/30/2005	9/2/2005	Reading 1	17 +/- 4		<49 +/-		56 +/- 5		169 +/- 8	
Sample also used as Precision Check			Reading 2	20 +/- 4		<48 +/-		65 +/- 5		243 +/- 10	
			Reading 3	18 +/- 4		63 +/- 17		86 +/- 5		252 +/- 10	
			Reading 4	29 +/- 5		51 +/- 16		83 +/- 5		248 +/- 10	
			Reading 5	16 +/- 4		<50 +/-		78 +/- 5		265 +/- 10	
			Reading 6	<13 +/-		<48 +/-		93 +/- 5		242 +/- 10	
			Reading 7	17 +/- 4		59 +/- 16		72 +/- 5		236 +/- 10	
			Reading 8	18 +/- 4		55 +/- 17		73 +/- 5		260 +/- 10	
			Reading 9	19 +/- 4		<49 +/-		62 +/- 5		233 +/- 9	
			Reading 10	14 +/- 4		<49 +/-		76 +/- 5		245 +/- 10	
			Average	19 +/- 4		57 +/- 17		74 +/- 5		239 +/- 10	
			Std Dev	4 +/- 0.3		5 +/- 0.5		11 +/- 0.0		27 +/- 0.6	
			Rel Std Dev	22.7% +/- 7.6%		9.1% +/- 3.0%		15.2% +/- 0.0%		11.1% +/- 6.6%	
			RSD Limit	< 20%		< 20%		< 20%		< 20%	
NIST 2709 Low		9/2/2005	Reading 1	19 +/- 4		<56 +/-		17 +/- 4		100 +/- 8	
			QC Limits	14 - 21		0.3 - 0.5		15 - 23		85 - 127	
NIST 2711 Med		9/2/2005	Reading 1	101 +/- 15		<55 +/-		1126 +/- 20		314 +/- 12	
			QC Limits	84 - 126		33 - 50		930 - 1394		280 - 420	
SIO2 Blank		9/1/2005	Reading 1	<6 +/-		<44 +/-		<8 +/-		<11 +/-	

Field XRF Results

8/31/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standardization	8/31/2006	1								
		2								
SiO2 Blank	8/31/2006	3	< 4		< 35		< 5		< 6	
		4	< 4		< 35		< 5		< 6	
		5	< 4		< 35		< 5		< 6	
		Average	< 4		< 35		< 5		< 6	
NIST 2710	8/31/2006	6	508 +/- 30		< 47		5223 +/- 49		6754 +/- 65	
		7	579 +/- 30		< 47		5276 +/- 49		6932 +/- 66	
		8	541 +/- 30		< 46		5283 +/- 49		6798 +/- 65	
		Average	543 +/- 30		< 47		5260 +/- 49		6828 +/- 65	
OSL-102 SS01	8/31/2006	9	< 20		< 36		407 +/- 8		488 +/- 10	
		10	< 18		< 36		308 +/- 7		478 +/- 10	
		11	< 19		< 36		373 +/- 7		415 +/- 9	
		Average	< 19		< 36		363 +/- 7		460 +/- 10	
OSL-101 SS01	8/31/2006	12	180 +/- 31		84 +/- 15		6236 +/- 55		25780 +/- 198	
		13	274 +/- 39		83 +/- 17		8045 +/- 75		33769 +/- 280	
		14	< 105		86 +/- 16		7470 +/- 66		30562 +/- 239	
		Average	227 +/- 59		84 +/- 16		7250 +/- 66		30037 +/- 239	
RTC-408	8/31/2006	15	276 +/- 7		237 +/- 11		274 +/- 6		< 9	
		16	451 +/- 10		407 +/- 14		440 +/- 9		< 11	
		17	411 +/- 10		369 +/- 13		429 +/- 9		< 11	
		Average	379 +/- 9		338 +/- 13		381 +/- 8		< 10	
OSL-103 SS01	8/31/2006	18	< 12		< 36		147 +/- 5		532 +/- 10	
		19	< 13		44 +/- 12		172 +/- 5		573 +/- 11	
		20	< 13		< 36		172 +/- 5		510 +/- 10	
		Average	< 13		44 +/- 28		164 +/- 5		538 +/- 10	
OSL-101 SS02	8/31/2006	21	516 +/- 53		72 +/- 21		10314 +/- 109		59888 +/- 565	
		22	298 +/- 29		55 +/- 17		4578 +/- 46		35180 +/- 280	
		23	320 +/- 33		61 +/- 17		5698 +/- 56		36531 +/- 298	
		Average	378 +/- 38		63 +/- 18		6864 +/- 71		43866 +/- 381	
OSL-100 SS01	8/31/2006	24	< 46		146 +/- 14		2054 +/- 21		13004 +/- 93	
		25	< 42		169 +/- 13		1815 +/- 19		13357 +/- 91	
		26	< 45		136 +/- 14		1955 +/- 21		16436 +/- 116	
		Average	< 44		151 +/- 13		1941 +/- 20		14266 +/- 100	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-100 SS02	8/31/2006	27	< 72		141 +/- 15		4079 +/- 38		16629 +/- 128	
		28	< 65		198 +/- 15		3444 +/- 33		17450 +/- 130	
		29	< 70		135 +/- 15		3846 +/- 37		16711 +/- 129	
		Average	< 69		158 +/- 15		3790 +/- 36		16930 +/- 129	
OSL-103 SS02	8/31/2006	30	< 13		< 39		148 +/- 5		1471 +/- 19	
		31	< 13		< 38		152 +/- 5		1927 +/- 23	
		32	< 12		< 39		119 +/- 5		1503 +/- 20	
		Average	< 13		< 39		140 +/- 5		1634 +/- 20	
OSL-102 SS02	8/31/2006	33	< 20		< 40		359 +/- 8		551 +/- 12	
		34	< 17		45 +/- 13		237 +/- 6		374 +/- 9	
		35	< 17		< 39		272 +/- 7		327 +/- 9	
		Average	< 18		45 +/- 31		289 +/- 7		417 +/- 10	
OSL-49E SS01	8/31/2006	36	< 15		< 36		221 +/- 6		705 +/- 12	
		37	< 15		< 35		234 +/- 6		800 +/- 13	
		38	< 13		< 35		185 +/- 5		664 +/- 11	
		Average	< 14		< 35		213 +/- 5		723 +/- 12	
OSL-49B SS01	8/31/2006	39	< 12		< 36		140 +/- 5		548 +/- 10	
		40	< 12		< 36		142 +/- 5		520 +/- 10	
		41	< 12		< 37		136 +/- 5		553 +/- 11	
		Average	< 12		< 36		139 +/- 5		540 +/- 10	
Standard RTC-408	8/31/2006	42	288 < 7		242 +/- 12		289 +/- 7		+/- 9	
		43	392 < 9		360 +/- 14		400 +/- 9		17 +/- 4	
		44	415 < 10		383 +/- 14		435 +/- 9		13 +/- 4	
		45	425 < 10		397 +/- 14		430 +/- 9		21 +/- 4	
		Average	380 < 9		346 +/- 13		388 +/- 8		17 +/- 5	
OSL-49B SS01	8/31/2006	46	< 12		< 36		136 +/- 4		561 +/- 11	
		47	< 12		< 36		146 +/- 5		558 +/- 10	
		48	< 12		< 36		136 +/- 5		565 +/- 11	
		49	< 12		< 36		143 +/- 5		568 +/- 11	
		50	< 12		< 36		141 +/- 5		568 +/- 11	
		51	< 12		< 36		143 +/- 5		576 +/- 11	
		52	< 12		< 36		147 +/- 5		564 +/- 11	
		Average	< 4		< 35		< 5		< 6	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standardization	8/31/2006	53								
SiO2 Blank	8/31/2006	54	< 4		< 35		< 5		< 7	
Standard NIST 2710	8/31/2006	55	350 +/- 19		< 38		2935 +/- 27		3807 +/- 37	
		56	573 +/- 31		< 47		5287 +/- 50		6718 +/- 66	
		57	558 +/- 31		< 47		5332 +/- 50		6956 +/- 67	
Standard RTC-408	8/31/2006	58	400 +/- 9		384 +/- 14		410 +/- 9		20 +/- 4	
		59	410 +/- 10		402 +/- 14		440 +/- 9		20 +/- 4	
OSL-49B SS02	8/31/2006	60	< 12		< 37		125 +/- 4		702 +/- 12	
		61	< 13		< 37		155 +/- 5		515 +/- 10	
		62	< 11		< 36		105 +/- 4		385 +/- 9	
		Average	< 12		< 37		128 +/- 4		534 +/- 10	
OSL-49C SS01	8/31/2006	63	58 +/- 17		112 +/- 14		2317 +/- 24		18187 +/- 130	
		64	< 34		85 +/- 13		1117 +/- 14		8668 +/- 65	
		65	< 33		103 +/- 13		1037 +/- 13		8014 +/- 61	
		Average	58 +/- 28		100 +/- 13		1491 +/- 17		11623 +/- 86	
OSL-49E SS02	8/31/2006	66	< 7		< 37		31 +/- 3		162 +/- 6	
		67	< 7		< 37		26 +/- 3		143 +/- 6	
		68	< 7		< 37		24 +/- 3		160 +/- 6	
		Average	< 7		< 37		27 +/- 3		155 +/- 6	
OSL-49D SS01	8/31/2006	69	< 18		< 35		364 +/- 7		881 +/- 13	
		70	< 16		< 36		284 +/- 6		762 +/- 12	
		71	< 18		< 36		361 +/- 7		910 +/- 14	
		Average	< 17		< 36		336 +/- 7		851 +/- 13	
OSL-40D SS02	8/31/2006	72	< 9		< 36		51 +/- 3		691 +/- 12	
		73	< 8		< 37		48 +/- 3		735 +/- 13	
		74	< 15		< 38		222 +/- 6		1134 +/- 16	
		Average	< 11		< 37		107 +/- 4		853 +/- 14	
OSL-49C SS02	8/31/2006	75	< 9		< 37		65 +/- 3		1139 +/- 16	
		76	< 11		49 +/- 12		117 +/- 4		1145 +/- 16	
		77	< 9		< 37		60 +/- 3		1118 +/- 15	
		Average	< 9		49 +/- 29		81 +/- 4		1134 +/- 16	
OSL-40E SS01	8/31/2006	78	< 14		< 37		209 +/- 6		992 +/- 15	
		79	< 13		< 37		157 +/- 5		526 +/- 10	
		80	< 13		< 37		174 +/- 5		425 +/- 9	
		Average	< 13		< 37		180 +/- 5		648 +/- 12	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-49A SS02	8/31/2006	81	< 13		< 38		157 +/- 5		656 +/- 12	
		82	< 12		< 38		135 +/- 5		800 +/- 13	
		83	< 12		< 37		143 +/- 5		605 +/- 11	
		Average	< 13		< 38		145 +/- 5		687 +/- 12	
OSL-49D SS02	8/31/2006	84	< 7		< 37		24 +/- 3		169 +/- 6	
		85	< 6		< 36		17 +/- 2		117 +/- 5	
		86	< 7		< 36		25 +/- 3		181 +/- 6	
		Average	< 7		< 36		22 +/- 3		155 +/- 6	
OSL-40D SS01	8/31/2006	87	< 36		44 +/- 13		1223 +/- 15		4544 +/- 41	
		88	< 45		70 +/- 14		1811 +/- 20		8305 +/- 66	
		89	< 38		< 39		1421 +/- 17		5841 +/- 49	
		Average	< 40		57 +/- 22		1485 +/- 17		6230 +/- 52	
OSL-40C SS01	8/31/2006	90	< 30		< 37		971 +/- 12		1691 +/- 20	
		91	51 +/- 14		< 38		1846 +/- 19		3383 +/- 32	
		92	86 +/- 12		< 37		1401 +/- 15		2807 +/- 28	
		Average	68 +/- 19		< 37		1406 +/- 16		2627 +/- 27	
OSL-40C SS02	8/31/2006	93	< 10		< 36		79 +/- 4		577 +/- 11	
		94	< 11		< 36		117 +/- 4		690 +/- 12	
		95	< 13		< 36		177 +/- 5		713 +/- 12	
		Average	< 11		< 36		124 +/- 4		660 +/- 12	
OSL-40B SS01	8/31/2006	96	< 15		< 38		223 +/- 6		762 +/- 13	
		97	19 +/- 6		< 37		298 +/- 7		1025 +/- 15	
		98	< 17		< 37		284 +/- 7		820 +/- 14	
		Average	19 +/- 13		< 37		268 +/- 6		869 +/- 14	
OSL-40E SS02	8/31/2006	99	< 20		< 39		361 +/- 8		1542 +/- 20	
		100	30 +/- 5		< 39		198 +/- 6		877 +/- 14	
		101	< 16		< 39		236 +/- 6		959 +/- 15	
		Average	30 +/- 14		< 39		265 +/- 7		1126 +/- 16	
OSL-40A SS02	8/31/2006	102	14 +/- 4		< 39		92 +/- 4		436 +/- 10	
		103	< 12		< 37		128 +/- 5		509 +/- 10	
		104	18 +/- 4		< 37		138 +/- 5		691 +/- 12	
		Average	16 +/- 7		< 38		120 +/- 4		545 +/- 11	
OSL-40B SS02	8/31/2006	105	< 9		< 38		49 +/- 3		251 +/- 8	
		106	< 11		< 47		52 +/- 4		217 +/- 9	
		107	< 9		< 40		47 +/- 3		245 +/- 8	
		Average	< 10		< 41		50 +/- 4		238 +/- 8	
SiO2 Blank	8/31/2006	108	< 4		< 35		< 5		< 7	
Standard NIST 2710	8/31/2006	109	613 +/- 31		+/- 47		5244 +/- 49		6913 +/- 67	

Analysis Date: 8/31/2006

Standard RTC-408	8/31/2006	110	408 +/- 10	406 +/- 14	434 +/- 9	12 +/- 4
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Field XRF Results

9/4/2006

Analysis Date: 9/4/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
	9/4/2006	1								
		2								
SIO2 Blank	9/4/2006	3	< 4		< 35		< 5		< 7	
RTC-408 Standard	9/4/2006	4	423 +/- 10		428 +/- 14		457 +/- 9		25 +/- 4	
NIST 2710 Standard	9/4/2006	5	573 +/- 30		< 46		5199 +/- 48		6738 +/- 65	
OSL-113 SS01	9/4/2006	6	< 6		< 38		12 +/- 2		34 +/- 4	
		7	< 6		< 36		13 +/- 2		54 +/- 4	
		8	< 6		< 36		15 +/- 2		51 +/- 4	
		Average	< 6		< 37		14 +/- 2		47 +/- 4	
OSL-109 SS01	9/4/2006	9	10 +/- 3		< 36		66 +/- 3		227 +/- 7	
		10	< 10		< 37		84 +/- 4		239 +/- 7	
		11	< 10		< 36		72 +/- 4		229 +/- 7	
		Average	10 +/- 8		< 36		74 +/- 4		232 +/- 7	
BG-OSL-103 SS01	9/4/2006	12	< 6		< 35		12 +/- 2		28 +/- 3	
		13	< 20		< 112		< 24		38 +/- 12	
		14	< 6		< 35		14 +/- 2		28 +/- 3	
		Average	< 11		< 61		13 +/- 10		31 +/- 6	
OSL-111 SS01	9/4/2006	15	< 9		< 35		66 +/- 3		150 +/- 6	
		16	< 9		< 35		68 +/- 3		189 +/- 6	
		17	< 8		< 35		57 +/- 3		170 +/- 6	
		Average	< 9		< 35		64 +/- 3		169 +/- 6	
BG-OSL-07 SS01	9/4/2006	18	< 8		< 36		37 +/- 3		90 +/- 5	
		19	< 7		41 +/- 12		27 +/- 3		75 +/- 4	
		20	< 7		< 35		27 +/- 3		72 +/- 4	
		Average	< 7		41 +/- 28		31 +/- 3		79 +/- 4	
BG-OSL-04 SS01	9/4/2006	21	< 7		< 36		26 +/- 3		99 +/- 5	
		22	8 +/- 3		< 39		26 +/- 3		103 +/- 5	
		23	7 +/- 2		< 36		15 +/- 2		46 +/- 4	
		Average	8 +/- 4		< 37		22 +/- 3		82 +/- 5	
OSL-016 SS01	9/4/2006	24	< 9		< 35		71 +/- 3		266 +/- 7	
		25	< 10		< 35		93 +/- 4		306 +/- 8	
		26	< 7		< 35		38 +/- 3		206 +/- 6	
		Average	< 9		< 35		67 +/- 3		259 +/- 7	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
BG-OSL-05 SS01	9/4/2006	27	< 6		< 35		23 +/- 3		49 +/- 4	
		28	< 6		< 36		10 +/- 2		37 +/- 4	
		29	< 6		< 34		17 +/- 2		41 +/- 4	
		Average	< 6		< 35		17 +/- 2		43 +/- 4	
OSL-104 SS01	9/4/2006	30	< 7		< 35		22 +/- 2		56 +/- 4	
		31	< 7		< 35		26 +/- 3		58 +/- 4	
		32	< 7		< 35		24 +/- 3		56 +/- 4	
		Average	< 7		< 35		24 +/- 3		57 +/- 4	
OSL-108 SS01	9/4/2006	33	< 8		< 35		46 +/- 3		179 +/- 6	
		34	< 9		< 36		65 +/- 3		176 +/- 6	
		35	< 8		36 +/- 12		47 +/- 3		165 +/- 6	
		Average	< 8		36 +/- 27		53 +/- 3		173 +/- 6	
SIO2 Blank	9/4/2006	36	< 4		< 34		< 5		< 6	
RTC-408 Standard	9/4/2006	37	406 +/- 9		394 +/- 14		405 +/- 9		18 +/- 4	
		38	387 +/- 9		378 +/- 14		399 +/- 9		16 +/- 4	
OSL-107 SS01	9/4/2006	39	< 9		< 37		51 +/- 3		161 +/- 6	
		40	< 8		< 36		53 +/- 3		162 +/- 6	
		41	< 9		< 37		68 +/- 4		188 +/- 7	
		Average	< 9		< 37		58 +/- 3		170 +/- 6	
OSL-105 SS01	9/4/2006	42	< 7		< 35		28 +/- 3		59 +/- 4	
		43	< 7		< 36		23 +/- 3		61 +/- 4	
		44	< 7		< 36		24 +/- 3		60 +/- 4	
		Average	< 7		< 36		25 +/- 3		60 +/- 4	
OSL-39A SS01	9/4/2006	45	< 6		< 37		11 +/- 2		181 +/- 6	
		46	< 8		< 38		33 +/- 3		180 +/- 7	
		47	< 8		< 38		34 +/- 3		256 +/- 8	
		Average	< 7		< 38		26 +/- 3		206 +/- 7	
OSL-111 SS01	9/4/2006	48	< 8		< 36		55 +/- 3		143 +/- 6	
		49	< 9		< 36		67 +/- 3		155 +/- 6	
		50	< 9		< 36		72 +/- 4		178 +/- 6	
		51	< 9		< 36		71 +/- 4		169 +/- 6	
		52	< 9		< 35		63 +/- 3		159 +/- 6	
		53	< 9		< 35		61 +/- 3		144 +/- 6	
		54	< 9		< 35		65 +/- 3		154 +/- 6	
		Average	< 9		< 36		65 +/- 3		157 +/- 6	
SIO2 Blank	9/4/2006	55	< 4		< 35		< 5		< 7	
RTC-408 Standard	9/4/2006	56	408 +/- 10		380 +/- 14		412 +/- 9		19 +/- 4	
		57	436 +/- 10		376 +/- 14		439 +/- 9		14 +/- 4	
Standardization	9/4/2006	58								

Field XRF Results

9/8/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
	9/8/2006	1								
SIO2 Blank	9/8/2006	2	< 4		< 35		< 5		< 7	
Standard RTC-408	9/8/2006	3	432 +/- 10		401 +/- 14		422 +/- 9		12 +/- 4	
		4	408 +/- 10		369 +/- 14		403 +/- 9		28 +/- 4	
		5	420 +/- 10		390 +/- 14		409 +/- 9		18 +/- 4	
		Average	420 +/- 10		387 +/- 14		411 +/- 9		19 +/- 4	
TSL-09 SS02	9/8/2006	6	< 8		< 37		43 +/- 3		133 +/- 6	
		7	< 8		< 37		42 +/- 3		126 +/- 6	
		8	< 8		< 37		35 +/- 3		125 +/- 6	
		Average	< 8		< 37		40 +/- 3		128 +/- 6	
TSL-09 SS01	9/8/2006	9	< 8		< 36		50 +/- 3		162 +/- 6	
		10	< 8		< 35		55 +/- 3		166 +/- 6	
		11	< 9		< 36		65 +/- 3		192 +/- 6	
		15	< 8		< 34		51 +/- 3		149 +/- 6	
		16	< 8		< 35		62 +/- 3		169 +/- 6	
		Average	< 8		< 35		57 +/- 3		168 +/- 6	
BG-OSL-06 SS01	9/8/2006	12	< 7		< 34		30 +/- 3		74 +/- 4	
		13	< 7		< 34		27 +/- 3		70 +/- 4	
		14	< 6		< 34		21 +/- 2		51 +/- 4	
		Average	< 6		< 34		26 +/- 3		65 +/- 4	
OSL-96E SS01	9/8/2006	17	< 7		< 34		36 +/- 3		103 +/- 5	
		18	< 8		< 34		44 +/- 3		136 +/- 5	
		19	< 7		< 35		32 +/- 3		124 +/- 5	
		Average	< 7		< 35		37 +/- 3		121 +/- 5	
OSL-96D SS02	9/8/2006	20	< 38		< 37		1578 +/- 17		1925 +/- 22	
		21	114 +/- 12		< 37		1251 +/- 15		2528 +/- 26	
		22	72 +/- 12		< 36		1453 +/- 16		1905 +/- 21	
		Average	93 +/- 21		< 37		1427 +/- 16		2119 +/- 23	
Standard NIST 2710	9/8/2006	23	572 +/- 30		< 46		5310 +/- 48		6842 +/- 64	
OSL-96D SS01	9/8/2006	24	15 +/- 5		46 +/- 12		173 +/- 5		600 +/- 11	
		25	< 11		< 35		125 +/- 4		373 +/- 9	
		26	< 22		< 35		538 +/- 9		824 +/- 13	
		Average	15 +/- 13		46 +/- 27		279 +/- 6		599 +/- 11	
SIO2 Blank	9/8/2006	27	< 4		< 33		< 5		< 7	
Standard RTC-408	9/8/2006	28	408 +/- 9		384 +/- 13		446 +/- 9		17 +/- 4	
		29	432 +/- 10		381 +/- 13		435 +/- 9		16 +/- 4	
		30	440 +/- 10		380 +/- 13		434 +/- 9		20 +/- 4	
		Average	427 +/- 10		381 +/- 13		438 +/- 9		17 +/- 4	

Field XRF Results

9/9/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standardization	9/9/2006	1								
SIO2 Blank	9/9/2006	2	< 4		< 34		< 5		< 7	
Standard RTC-408	9/9/2006	3	427 +/- 9		351 +/- 13		394 +/- 9		15 +/- 4	
		4	414 +/- 10		372 +/- 14		419 +/- 9		< 11	
		5	406 +/- 9		347 +/- 13		422 +/- 9		18 +/- 4	
OSL-96D SS02	9/9/2006	6	79 +/- 11		< 38		1174 +/- 14		2092 +/- 23	
		7	37 +/- 8		< 37		519 +/- 9		1256 +/- 17	
		8	42 +/- 9		< 36		825 +/- 11		1445 +/- 18	
		Average	53 +/- 9		< 37		839 +/- 11		1598 +/- 20	
OSL-96E SS02	9/9/2006	9	< 7		< 41		18 +/- 3		23 +/- 4	
		10	< 6		< 37		12 +/- 2		43 +/- 4	
		11	< 9		< 38		52 +/- 3		132 +/- 6	
		Average	< 7		< 39		27 +/- 3		66 +/- 4	
OSL-96A SS02	9/9/2006	12	< 14		< 36		177 +/- 5		692 +/- 12	
		13	< 13		< 36		153 +/- 5		509 +/- 10	
		14	< 12		< 36		129 +/- 4		488 +/- 10	
		Average	< 13		< 36		153 +/- 5		563 +/- 11	
OSL-96C SS01	9/9/2006	15	< 12		< 37		135 +/- 5		386 +/- 9	
		16	< 10		< 35		96 +/- 4		341 +/- 8	
		17	< 9		< 34		81 +/- 4		281 +/- 7	
		Average	< 11		< 35		104 +/- 4		336 +/- 8	
OSL-96C SS02	9/9/2006	18	< 11		< 37		94 +/- 4		304 +/- 8	
		19	< 10		< 37		86 +/- 4		305 +/- 8	
		20	< 11		< 36		102 +/- 4		327 +/- 8	
		Average	< 11		< 37		94 +/- 4		312 +/- 8	
TSL-05A SS02	9/9/2006	21	< 10		< 38		83 +/- 4		694 +/- 13	
		22	< 8		< 38		37 +/- 3		404 +/- 10	
		23	< 10		< 38		70 +/- 4		692 +/- 13	
		Average	< 10		< 38		63 +/- 4		597 +/- 12	
TSL-05B SS02	9/9/2006	24	< 14		< 39		166 +/- 5		1084 +/- 16	
		25	< 10		< 36		74 +/- 4		621 +/- 11	
		26	< 10		< 37		89 +/- 4		493 +/- 11	
		Average	< 11		< 38		110 +/- 4		733 +/- 13	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
TSL-05B SS01	9/9/2006	27	< 17		< 36		285 +/- 6		1026 +/- 15	
		28	< 16		< 36		264 +/- 6		711 +/- 12	
		29	< 18		< 36		357 +/- 7		1033 +/- 15	
		Average	< 17		< 36		302 +/- 7		923 +/- 14	
TSL-05D SS01	9/9/2006	30	< 23		< 37		598 +/- 10		1633 +/- 20	
		31	< 27		46 +/- 12		787 +/- 11		1774 +/- 21	
		32	< 18		< 37		348 +/- 7		1488 +/- 19	
		Average	< 23		46 +/- 29		578 +/- 9		1631 +/- 20	
Standard RTC-408	9/9/2006	33	425 +/- 10		383 +/- 14		414 +/- 9		20 +/- 4	
		34	372 +/- 10		328 +/- 14		409 +/- 9		14 +/- 4	
		35	398 +/- 10		347 +/- 14		400 +/- 9		20 +/- 4	
TSL-05D SS02	9/9/2006	36	< 15		< 40		189 +/- 6		799 +/- 14	
		37	< 10		< 42		50 +/- 4		323 +/- 10	
		38	16 +/- 3		< 40		58 +/- 4		435 +/- 10	
		Average	16 +/- 10		< 41		99 +/- 4		519 +/- 11	
TSL-05C SS01	9/9/2006	39	< 10		< 36		94 +/- 4		325 +/- 8	
		40	< 20		< 36		399 +/- 8		454 +/- 10	
		41	< 15		< 36		203 +/- 6		385 +/- 9	
		Average	< 15		< 36		232 +/- 6		388 +/- 9	
TSL-05C SS02	9/9/2006	42	< 8		< 36		39 +/- 3		483 +/- 10	
		43	14 +/- 4		< 39		99 +/- 4		329 +/- 9	
		44	< 12		< 39		116 +/- 5		388 +/- 10	
		Average	14 +/- 8		< 38		85 +/- 4		400 +/- 9	
TRB-10D SS02	9/9/2006	45	< 18		< 41		238 +/- 7		1060 +/- 17	
		46	< 20		< 40		328 +/- 8		1849 +/- 23	
		47	21 +/- 7		< 39		329 +/- 8		1802 +/- 23	
		Average	21 +/- 15		< 40		298 +/- 7		1570 +/- 21	
TRB-10E SS02	9/9/2006	48	< 9		< 45		29 +/- 4		291 +/- 10	
		49	< 17		< 45		178 +/- 7		1028 +/- 19	
		50	< 7		< 40		11 +/- 3		265 +/- 8	
		Average	< 11		< 44		73 +/- 4		528 +/- 12	
TSL-05E SS02	9/9/2006	51	< 7		< 38		22 +/- 3		199 +/- 7	
		52	< 10		< 37		72 +/- 4		414 +/- 9	
		53	11 +/- 3		< 36		60 +/- 3		422 +/- 9	
		Average	11 +/- 7		< 37		52 +/- 3		345 +/- 9	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
TSL-05E SS01	9/9/2006	54	< 19		< 36		415 +/- 8		957 +/- 14	
		55	< 13		< 36		151 +/- 5		698 +/- 12	
		56	< 12		< 35		149 +/- 5		658 +/- 12	
		Average	< 15		< 36		238 +/- 6		771 +/- 13	
TRB-10D SS01	9/9/2006	57	< 18		< 38		280 +/- 7		1085 +/- 16	
		58	< 17		< 36		263 +/- 6		1081 +/- 16	
		59	< 22		< 47		273 +/- 8		1138 +/- 21	
		Average	< 19		< 41		272 +/- 7		1101 +/- 18	
TRB-10B SS01	9/9/2006	60	< 8		< 37		36 +/- 3		186 +/- 7	
		61	< 9		< 37		55 +/- 3		408 +/- 9	
		62	< 10		< 35		79 +/- 4		365 +/- 8	
		Average	< 9		< 36		57 +/- 3		320 +/- 8	
TRB-10E SS01	9/9/2006	63	< 13		< 36		162 +/- 5		888 +/- 14	
		64	< 15		< 37		196 +/- 6		665 +/- 12	
		65	14 +/- 5		< 36		172 +/- 5		611 +/- 11	
		Average	14 +/- 11		< 36		176 +/- 5		721 +/- 12	
Standardization	9/9/2006	66								
SIO2 Blank	9/9/2006	67	< 5		< 44		< 7		< 9	
Standard RTC-408	9/9/2006	68	405 +/- 12		398 +/- 17		429 +/- 11		< 14	
TRB-10A SS02	9/9/2006	69	< 13		< 45		92 +/- 5		591 +/- 14	
		70	< 8		< 43		12 +/- 3		269 +/- 9	
		71	< 9		< 44		34 +/- 3		354 +/- 11	
		Average	< 10		< 44		46 +/- 4		405 +/- 11	
TRB-10B SS02	9/9/2006	72	< 12		< 45		67 +/- 4		327 +/- 10	
		73	< 10		< 47		35 +/- 4		143 +/- 7	
		74	< 12		< 43		88 +/- 5		422 +/- 11	
		Average	< 11		< 45		63 +/- 4		298 +/- 10	
TRB-10C SS02	9/9/2006	75	14 +/- 4		< 45		57 +/- 4		303 +/- 10	
		76	< 11		< 44		56 +/- 4		119 +/- 7	
		77	12 +/- 3		< 44		43 +/- 4		93 +/- 6	
		Average	13 +/- 6		< 45		52 +/- 4		171 +/- 8	
TRB-10C SS01	9/9/2006	78	< 13		< 47		85 +/- 5		267 +/- 10	
		79	< 12		< 46		64 +/- 5		482 +/- 13	
		80	16 +/- 4		49 +/- 15		84 +/- 5		1395 +/- 22	
		81	< 13		< 44		90 +/- 5		1370 +/- 22	
		Average	16 +/- 11		49 +/- 38		81 +/- 5		879 +/- 17	

Analysis Date: 9/9/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-12E SS01	9/9/2006	82	< 13		< 45		108 +/- 5		373 +/- 11	
		83	< 13		< 43		111 +/- 5		405 +/- 11	
		84	< 16		< 46		142 +/- 6		489 +/- 13	
		Average	< 14		< 45		120 +/- 5		422 +/- 12	
OSL-12D SS02	9/9/2006	85	< 9		< 45		23 +/- 3		343 +/- 10	
		86	< 11		< 45		73 +/- 4		420 +/- 12	
		87	< 9		< 46		38 +/- 4		310 +/- 10	
		Average	< 10		< 46		45 +/- 4		358 +/- 11	
OSL-12D SS01	9/9/2006	88	< 14		< 44		125 +/- 5		321 +/- 10	
		89	< 14		< 44		126 +/- 5		385 +/- 11	
		90	< 16		< 44		165 +/- 6		491 +/- 12	
		Average	< 15		< 44		139 +/- 6		399 +/- 11	
OSL-12E SS02	9/9/2006	91	< 14		< 45		110 +/- 5		409 +/- 11	
		92	< 13		< 45		85 +/- 5		364 +/- 11	
		93	< 13		< 46		82 +/- 5		308 +/- 10	
		Average	< 13		< 46		92 +/- 5		360 +/- 11	
OSL-12B SS02	9/9/2006	94	< 8		< 47		19 +/- 3		65 +/- 5	
		95	< 8		< 46		18 +/- 3		52 +/- 5	
		96	< 9		< 46		24 +/- 3		70 +/- 6	
		Average	< 8		< 46		20 +/- 3		62 +/- 5	
Standard RTC-408	9/9/2006	97	423 +/- 12		399 +/- 17		452 +/- 11		< 14	
OSL-12E SS02	9/9/2006	98	< 12		< 46		75 +/- 5		293 +/- 10	
		99	< 13		< 45		86 +/- 5		284 +/- 10	
		100	< 12		< 45		86 +/- 5		279 +/- 9	
		101	< 13		< 47		74 +/- 5		294 +/- 10	
		102	< 13		< 46		78 +/- 5		304 +/- 10	
		103	< 13		< 45		90 +/- 5		304 +/- 10	
		104	< 13		< 46		91 +/- 5		287 +/- 10	
		Average	< 13		< 46		83 +/- 5		292 +/- 10	
OSL-12C SS01	9/9/2006	105	< 15		< 44		155 +/- 6		404 +/- 11	
		106	< 15		< 43		150 +/- 6		423 +/- 11	
		107	< 14		< 44		118 +/- 5		393 +/- 11	
		Average	< 15		< 44		141 +/- 6		407 +/- 11	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-12C SS02	9/9/2006	108	< 13		< 46		78 +/- 5		329 +/- 10	
		109	< 9		< 45		35 +/- 4		256 +/- 9	
		110	< 13		< 45		94 +/- 5		372 +/- 11	
		Average	< 12		< 45		69 +/- 4		319 +/- 10	
OSL-12A SS02	9/9/2006	111	< 13		51 +/- 16		90 +/- 5		521 +/- 13	
		112	< 11		< 46		52 +/- 4		443 +/- 12	
		113	< 12		< 45		81 +/- 5		494 +/- 12	
		Average	< 12		51 +/- 36		74 +/- 5		486 +/- 13	
OSL-39E SS02	9/9/2006	114	< 10		< 49		26 +/- 4		316 +/- 11	
		115	< 8		< 46		18 +/- 3		248 +/- 9	
		116	< 9		< 46		31 +/- 3		386 +/- 11	
		Average	< 9		< 47		25 +/- 3		317 +/- 10	
OSL-12B SS01	9/9/2006	117	12 +/- 3		< 46		27 +/- 3		166 +/- 8	
		118	< 10		< 47		35 +/- 4		163 +/- 8	
		119	< 10		< 46		49 +/- 4		174 +/- 8	
		Average	12 +/- 8		< 46		37 +/- 4		168 +/- 8	
OSL-39E SS01	9/9/2006	120	24 +/- 6		< 45		192 +/- 7		1514 +/- 23	
		121	< 34		< 46		785 +/- 14		2921 +/- 36	
		122	< 29		< 45		612 +/- 12		2107 +/- 28	
		123	< 35		< 47		790 +/- 14		2762 +/- 35	
		Average	24 +/- 26		< 46		595 +/- 12		2326 +/- 30	
OSL-39D SS01	9/9/2006	124	< 33		< 45		752 +/- 13		2533 +/- 32	
		125	< 35		< 48		819 +/- 14		2477 +/- 33	
		126	< 39		< 50		893 +/- 16		2885 +/- 38	
		Average	< 36		< 47		821 +/- 15		2632 +/- 34	
OSL-39D SS02	9/9/2006	127	< 11		< 48		44 +/- 4		269 +/- 10	
		128	< 9		< 48		29 +/- 4		138 +/- 7	
		129	< 9		< 48		19 +/- 3		212 +/- 9	
		Average	< 10		< 48		31 +/- 4		206 +/- 9	
OSL-40DD SS01	9/9/2006	130	< 37		< 49		815 +/- 15		2105 +/- 31	
		131	43 +/- 14		< 49		972 +/- 17		2447 +/- 34	
		132	< 46		< 49		1318 +/- 20		2466 +/- 34	
		Average	43 +/- 32		< 49		1035 +/- 17		2339 +/- 33	
OSL-40CCC SS01	9/9/2006	133	< 27		< 53		362 +/- 10		2456 +/- 36	
		134	< 31		< 53		485 +/- 12		2399 +/- 36	
		135	< 30		< 51		461 +/- 11		2583 +/- 36	
		Average	< 29		< 52		436 +/- 11		2479 +/- 36	

Analysis Date: 9/9/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standard RTC-408	9/9/2006	136	443	+/- 13	399	+/- 18	460	+/- 12	23	+/- 5
OSL-40CC SS01	9/9/2006	137	<	25	<	50	370	+/- 10	1294	+/- 23
		138	<	25	<	49	354	+/- 10	1242	+/- 22
		139	<	25	<	49	381	+/- 10	1626	+/- 26
		Average	<	25	<	49	368	+/- 10	1387	+/- 24
OSL-116 SS01	9/9/2006	140	72	+/- 16	<	49	1326	+/- 20	4405	+/- 51
		141	121	+/- 19	<	51	1768	+/- 25	5540	+/- 61
		142	78	+/- 18	58	+/- 17	1584	+/- 23	5337	+/- 60
		Average	90	+/- 18	58	+/- 39	1559	+/- 23	5094	+/- 57
OSL-49EE SS01	9/9/2006	143	<	10	<	47	38	+/- 4	228	+/- 9
		144	<	9	<	47	30	+/- 4	169	+/- 8
		145	<	10	<	47	39	+/- 4	257	+/- 10
		Average	<	10	<	47	36	+/- 4	218	+/- 9
OSL-39B SS01	9/9/2006	146	<	12	<	50	60	+/- 5	960	+/- 19
		147	<	15	<	47	121	+/- 6	885	+/- 17
		148	<	18	<	47	193	+/- 7	822	+/- 17
		Average	<	15	<	48	125	+/- 6	889	+/- 18
OSL-39B SS02	9/9/2006	149	<	13	54	+/- 17	73	+/- 5	564	+/- 15
		150	<	13	<	49	76	+/- 5	591	+/- 15
		151	<	25	<	49	381	+/- 10	1142	+/- 21
		Average	<	17	54	+/- 38	177	+/- 7	766	+/- 17
OSL-39C SS01	9/9/2006	152	<	20	<	47	246	+/- 8	920	+/- 18
		153	<	15	<	46	133	+/- 6	632	+/- 14
		154	13	+/- 4	<	47	74	+/- 5	547	+/- 14
		Average	13	+/- 13	<	46	151	+/- 6	700	+/- 15

Analysis Date: 9/9/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-49DD SS01	9/9/2006	155	< 10		< 45		47 +/- 4		248 +/- 9	
		156	< 10		< 45		46 +/- 4		241 +/- 9	
		157	< 15		< 46		147 +/- 6		529 +/- 13	
		Average	< 12		< 45		80 +/- 5		339 +/- 10	
OSL-39C SS02	9/9/2006	158	< 12		< 48		75 +/- 5		282 +/- 10	
		159	< 12		< 49		65 +/- 5		428 +/- 13	
		160	< 9		< 47		28 +/- 3		331 +/- 11	
		Average	< 11		< 48		56 +/- 4		347 +/- 11	
Standard RTC-408	9/9/2006	161	415 +/- 12		394 +/- 18		418 +/- 11		< 14	
SIO2 Blank	9/9/2006	162	< 5		< 45		< 7		< 9	
Standard Nist 2710	9/9/2006	163	586 +/- 40		< 61		5403 +/- 65		6969 +/- 87	

Field XRF Results

9/14/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standardization	9/14/2006	1								
SiO2 Blank	9/14/2006	2	< 5		< 45		< 6		< 10	
RTC-408 Check Standard	9/14/2006	3	383 +/- 13		364 +/- 18		417 +/- 12		< 15	
		4	425 +/- 13		398 +/- 18		430 +/- 12		17 +/- 5	
OSL-36B SS02	9/14/2006	5	< 10		< 47		42 +/- 4		626 +/- 15	
		6	< 10		< 48		39 +/- 4		655 +/- 15	
		7	< 9		59 +/- 15		28 +/- 3		401 +/- 11	
		Average	< 10		59 +/- 36		36 +/- 4		561 +/- 14	
TRB-08E SS01	9/14/2006	8	< 15		< 45		136 +/- 6		577 +/- 14	
		9	< 15		< 45		140 +/- 6		557 +/- 13	
		10	< 15		< 46		124 +/- 6		1007 +/- 19	
		Average	< 15		< 45		133 +/- 6		714 +/- 15	
OSL-114 SS01	9/14/2006	11	10 +/- 3		< 46		37 +/- 4		208 +/- 9	
		12	< 10		< 46		44 +/- 4		193 +/- 8	
		13	< 11		< 46		56 +/- 4		211 +/- 8	
		Average	10 +/- 8		< 46		46 +/- 4		204 +/- 8	
TRB-08B SS01	9/14/2006	14	< 15		< 46		135 +/- 6		477 +/- 13	
		15	< 15		< 46		124 +/- 6		504 +/- 13	
		16	< 17		< 47		160 +/- 6		679 +/- 16	
		Average	< 15		< 46		140 +/- 6		553 +/- 14	
TRB-08A SS02	9/14/2006	17	149 +/- 21		< 52		2016 +/- 27		5107 +/- 58	
		18	54 +/- 18		57 +/- 18		1464 +/- 23		4667 +/- 56	
		19	257 +/- 24		< 52		2598 +/- 33		4676 +/- 55	
		Average	153 +/- 21		57 +/- 41		2026 +/- 28		4817 +/- 57	
TRB-08C SS02	9/14/2006	20	< 31		< 49		569 +/- 12		1801 +/- 28	
		21	< 31		< 49		566 +/- 12		1603 +/- 26	
		22	< 30		< 48		584 +/- 12		1397 +/- 23	
		Average	< 31		< 49		573 +/- 12		1600 +/- 26	
TRB-08C SS01	9/14/2006	23	< 29		< 47		521 +/- 11		1898 +/- 28	
		24	< 31		< 49		566 +/- 12		2236 +/- 31	
		25	< 25		< 49		375 +/- 10		1212 +/- 22	
		Average	< 28		< 48		487 +/- 11		1782 +/- 27	
TRB-08B SS02	9/14/2006	26	< 14		< 46		104 +/- 5		430 +/- 12	
		27	< 15		< 47		119 +/- 6		490 +/- 13	
		28	< 17		< 47		167 +/- 6		601 +/- 14	
		Average	< 15		< 47		130 +/- 6		507 +/- 13	

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
TRB-08E SS02	9/14/2006	29	< 17		< 47		170 +/- 7		1275 +/- 22	
		30	< 16		< 46		142 +/- 6		791 +/- 16	
		31	< 14		< 45		121 +/- 5		449 +/- 12	
		Average	< 16		< 46		145 +/- 6		838 +/- 17	
OSL-97B SS02	9/14/2006	32	< 11		< 48		54 +/- 4		192 +/- 9	
		33	< 11		< 48		49 +/- 4		161 +/- 8	
		34	< 12		< 48		71 +/- 5		226 +/- 9	
		Average	< 12		< 48		58 +/- 4		193 +/- 9	
RTC-408 Check Standard	9/14/2006	35	437 +/- 13		364 +/- 17		427 +/- 12		19 +/- 5	
		36	445 +/- 13		396 +/- 18		427 +/- 12		27 +/- 5	
NIST 2710 Check Standard	9/14/2006	37	641 +/- 40		< 62		5278 +/- 65		6781 +/- 87	
OSL-97E SS02	9/14/2006	38	< 26		< 46		434 +/- 10		801 +/- 17	
		39	< 19		< 48		206 +/- 7		719 +/- 16	
		40	< 19		57 +/- 16		224 +/- 7		2040 +/- 29	
		41	< 19		< 48		229 +/- 8		2144 +/- 30	
		Average	< 20		57 +/- 40		273 +/- 8		1426 +/- 23	
OSL-97G SS01	9/14/2006	42	< 17		< 48		162 +/- 7		395 +/- 12	
		43	< 17		< 46		173 +/- 6		425 +/- 12	
		44	< 17		< 47		173 +/- 7		444 +/- 12	
		Average	< 17		< 47		169 +/- 7		421 +/- 12	
OSL-97D SS02	9/14/2006	45	< 12		< 49		64 +/- 5		594 +/- 15	
		46	< 9		< 51		16 +/- 3		73 +/- 6	
		47	< 10		< 49		35 +/- 4		211 +/- 9	
		Average	< 10		< 49		38 +/- 4		293 +/- 10	
OSL-97E SS01	9/14/2006	48	< 33		< 48		677 +/- 13		3841 +/- 45	
		49	< 24		< 46		405 +/- 10		1404 +/- 23	
		50	< 25		< 49		371 +/- 10		2762 +/- 37	
		Average	< 27		< 48		484 +/- 11		2669 +/- 35	
OSL-97F SS02	9/14/2006	51	< 35		< 49		763 +/- 14		790 +/- 17	
		52	< 20		< 48		234 +/- 8		531 +/- 14	
		53	< 17		< 49		175 +/- 7		500 +/- 13	
		Average	< 24		< 49		391 +/- 10		607 +/- 15	

Analysis Date: 9/14/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
OSL-97C SS02	9/14/2006	54	< 11		< 47		53 +/- 4		176 +/- 8	
		55	< 9		< 46		28 +/- 3		116 +/- 7	
		56	< 12		48 +/- 16		69 +/- 5		134 +/- 7	
		Average	< 11		48 +/- 37		50 +/- 4		142 +/- 7	
OSL-36C SS02	9/14/2006	57	< 15		< 48		116 +/- 6		498 +/- 13	
		58	< 15		< 48		137 +/- 6		409 +/- 12	
		59	< 14		< 47		89 +/- 5		443 +/- 12	
		Average	< 15		< 48		114 +/- 6		450 +/- 13	
OSL-36D SS01	9/14/2006	60	< 13		< 49		87 +/- 5		341 +/- 11	
		61	< 14		< 48		87 +/- 5		374 +/- 12	
		62	< 16		< 49		124 +/- 6		484 +/- 13	
		Average	< 14		< 49		99 +/- 5		400 +/- 12	
OSL-36B SS01	9/14/2006	63	< 18		< 51		161 +/- 7		596 +/- 16	
		64	< 12		< 47		74 +/- 5		462 +/- 13	
		65	< 17		< 48		161 +/- 6		557 +/- 14	
		Average	< 16		< 49		132 +/- 6		538 +/- 14	
OSL-36E SS01	9/14/2006	66	< 22		< 47		290 +/- 8		1186 +/- 21	
		67	< 29		< 49		467 +/- 11		1761 +/- 28	
		68	< 15		< 48		122 +/- 6		1093 +/- 20	
		Average	< 22		< 48		293 +/- 8		1346 +/- 23	
RTC-408 Check Standard	9/14/2006	69	452 +/- 13		385 +/- 18		430 +/- 12		19 +/- 5	
SiO2 Blank	9/14/2006	70	< 6		< 45		< 7		< 9	
RTC-408 Check Standard	9/14/2006	71	444 +/- 13		407 +/- 18		434 +/- 12		16 +/- 5	
TRB-09A SS02	9/14/2006	72	< 22		< 48		256 +/- 8		1014 +/- 20	
Standardization	9/14/2006	73								
		74								
		75								
SiO2 Blank	9/14/2006	76	< 5		< 45		< 6		< 9	
RTC-408 Check Standard	9/14/2006	77	445 +/- 13		370 +/- 18		452 +/- 12		21 +/- 5	

Field XRF Results

9/15/2006

Analysis Date: 9/15/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
Standardization	9/15/2006	1								
SiO2 Blank	9/15/2006	2	< 6		< 47		< 8		< 8	
RTC-408 Check Standard	9/15/2006	3	436 +/- 14		419 +/- 19		444 +/- 12		< 16	
TRB-09A SS02	9/15/2006	4	33 +/- 9		< 52		328 +/- 10		1090 +/- 22	
		5	< 24		< 49		325 +/- 9		1346 +/- 24	
		6	41 +/- 11		< 52		542 +/- 13		1410 +/- 25	
		Average	37 +/- 15		< 51		399 +/- 11		1282 +/- 24	
OSL-36C SS01	9/15/2006	7	< 14		< 48		93 +/- 5		450 +/- 13	
		8	< 17		< 48		156 +/- 6		662 +/- 15	
		9	< 18		< 47		176 +/- 7		857 +/- 18	
		Average	< 16		< 48		142 +/- 6		656 +/- 15	
OSL-36D SS02	9/15/2006	10	< 17		< 49		145 +/- 6		587 +/- 15	
		11	< 16		< 51		117 +/- 6		405 +/- 13	
		12	< 15		< 49		112 +/- 6		404 +/- 12	
		Average	< 16		< 49		124 +/- 6		465 +/- 13	
TRB-09B SS01	9/15/2006	13	34 +/- 7		< 47		221 +/- 7		894 +/- 18	
		14	< 24		< 48		350 +/- 9		1265 +/- 22	
		15	< 24		< 47		337 +/- 9		1217 +/- 21	
		Average	34 +/- 18		< 47		303 +/- 9		1125 +/- 20	
OSL-36A SS02	9/15/2006	16	< 8		< 46		21 +/- 3		275 +/- 10	
		17	< 11		< 47		54 +/- 4		326 +/- 11	
		18	14 +/- 5		< 46		92 +/- 5		358 +/- 11	
		Average	14 +/- 8		< 46		55 +/- 4		320 +/- 10	
OSL-36E SS02	9/15/2006	19	< 19		< 46		250 +/- 8		868 +/- 17	
		20	< 19		< 46		210 +/- 7		946 +/- 18	
		21	23 +/- 6		< 46		219 +/- 7		1022 +/- 19	
		Average	23 +/- 15		< 46		227 +/- 7		946 +/- 18	
TRB-09E SS02	9/15/2006	22	< 26		< 47		435 +/- 10		1429 +/- 24	
		23	< 23		< 46		341 +/- 9		1190 +/- 21	
		24	< 23		< 46		333 +/- 9		1121 +/- 20	
		Average	< 24		< 47		370 +/- 9		1247 +/- 21	

Analysis Date: 9/15/2006

Sample Name	Date Analyzed	Instrument Count	Arsenic		Cadmium		Lead		Zinc	
			Result	Error	Result	Error	Result	Error	Result	Error
TRB-09E SS01	9/15/2006	25	< 17		< 45		174 +/- 6		742 +/- 16	
		26	< 18		< 46		200 +/- 7		791 +/- 17	
		27	< 18		< 46		189 +/- 7		733 +/- 16	
		Average	< 18		< 46		188 +/- 7		756 +/- 16	
TRB-09B SS02	9/15/2006	28	21 +/- 7		< 47		232 +/- 8		960 +/- 18	
		29	< 22		< 48		278 +/- 8		1041 +/- 19	
		30	< 26		< 48		399 +/- 10		1439 +/- 24	
		Average	21 +/- 18		< 48		303 +/- 9		1147 +/- 21	
TRB-09E SS01	9/15/2006	31	< 18		< 45		184 +/- 7		733 +/- 16	
		32	< 18		< 47		202 +/- 7		739 +/- 16	
		33	< 19		< 47		211 +/- 7		722 +/- 16	
		34	< 19		< 47		206 +/- 7		751 +/- 16	
		35	< 18		< 47		203 +/- 7		753 +/- 16	
		36	< 19		< 47		208 +/- 7		734 +/- 16	
		37	< 18		< 47		205 +/- 7		749 +/- 16	
		Average	< 18		< 47		205 +/- 7		746 +/- 16	
SiO2 Blank	9/15/2006	38	< 5		< 45		< 7		< 8	
RTC-408 Check Standard	9/15/2006	39	429 +/- 13		374 +/- 18		451 +/- 12		18 +/- 5	
		40	446 +/- 13		396 +/- 18		443 +/- 12		21 +/- 5	